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Birds

# THE BIRDS

OF

NORTH AND MIDDLE AMERICA:

A DESCRIPTIVE CATALOGUE

OF THE

HIGHER GROUPS, GENERA, SPECIES, AND SUBSPECIES OF BIRDS  
KNOWN TO OCCUR IN NORTH AMERICA, FROM THE  
ARCTIC LANDS TO THE ISTHMUS OF PANAMA  
THE WEST INDIES AND OTHER ISLANDS  
OF THE CARIBBEAN SEA, AND THE  
GALAPAGOS ARCHIPELAGO

BY

ROBERT RIDGWAY,

CURATOR, DIVISION OF BIRDS.

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## PART VI.

Family PICIDÆ—The Woodpeckers.  
Family CAPITONIDÆ—The Barbets.  
Family RAMPHASTIDÆ—The Toucans.  
Family BUCCONIDÆ—The Puff Birds.  
Family GALBULIDÆ—The Jacamars.  
Family ALCEDINIDÆ—The Kingfishers.

Family TODIDÆ—The Todies.  
Family MOMOTIDÆ—The Motmots.  
Family CAPRIMULGIDÆ—The Goatsuckers.  
Family NYCTIBIDÆ—The Potoos.  
Family TYTONIDÆ—The Barn Owls.  
Family BUBONIDÆ—The Eared Owls.

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## PREFACE.

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More than one-third of the present volume (pp. 1-309, inclusive) was printed in 1911, having been intended for Part V; but, as stated in the Preface to that volume, could not be included therein without unduly increasing the bulk. The matter has, however, been revised, and to a large extent reset, in order to bring the subject up to date. A similar fate has befallen two large groups intended for the present volume, namely, the Coccoygiformes (Cuckoo-like Birds) and Psittaciformes (Parrots); the former having been left out at the last moment (for the same reason as were the Woodpeckers from Part V), after having been entirely put in type,<sup>1</sup> the latter in large part completed in manuscript.

The Families of birds included in the present and preceding volumes are as follows:

Part I, issued October 24, 1901, included the Fringillidæ (Finches) alone.

Part II, issued October 16, 1902, included the Tanagridæ (Tanagers), Icteridæ (Troupials), Cœrebidæ (Honey Creepers), and Mniotiltidæ (Wood Warblers).

Part III, issued December 31, 1904, included the Motacillidæ (Wag-tails and Pipits), Hirundinidæ (Swallows), Ampelidæ (Waxwings), Ptilogonatidæ (Silky Flycatchers), Dulidæ (Palm Chats), Vireonidæ (Vireos), Laniidæ (Shrikes), Corvidæ (Crows and Jays), Paridæ (Titmice), Sittidæ (Nuthatches), Certhiidæ (Creepers), Troglodytidæ (Wrens), Cinclidæ (Dippers), Chamæidæ (Wren-Tits), and Sylviidæ (Warblers).

Part IV, issued July 1, 1907, contained the remaining groups of Oscines, namely, the Turdidæ (Thrushes), Zeledoniidæ (Wren-Thrushes), Mimidæ (Mockingbirds), Sturnidæ (Starlings), Ploceidæ (Weaverbirds), and Alaudidæ (Larks), together with the Haploophone or Oligomyodian Mesomyodi, comprising Oxyruncidæ (Sharpbills), Tyrannidæ (Tyrant Flycatchers), Pipridæ (Manakins), and Cotingidæ (Chatterers).

Part V, issued November 29, 1911, includes the Tracheophone Mesomyodi, represented by the Pteroptochidæ (Tapaculos), Formicariidæ (Antbirds), Furnariidæ (Ovenbirds), and Dendrocolaptidæ

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<sup>1</sup> This matter, comprising 101 printed pages, will appear in Part VII.



(Woodhewers); the Macrochires, containing the Trochilidæ (Humming Birds) and Micropodidæ (Swifts), and the Heterodactylæ, represented only by the Trogonidæ (Trogons).

Part VI (the present volume) contains the Picariæ, comprising the families Picidæ (Woodpeckers), Capitonidæ (Barbets), Ramphastidæ (Toucans), Bucconidæ (Puff Birds), and Galbulidæ (Jacamars); the Anisodactylæ, with families Alcedinidæ (Kingfishers), Todidæ (Todies), and Momotidæ (Motmots); the Nycticoraciæ, with families Caprimulgidæ (Goatsuckers) and Nyctibiidæ (Potoos), and the Striges, consisting of families Tytonidæ (Barn Owls) and Bubonidæ (Eared Owls).

In these six volumes are treated, in detail (that is, with full synonymies and descriptions), besides the Families above mentioned and the higher groups to which they, respectively, belong. 520 genera, 2111 species and subspecies, besides 155 extralimital genera and 478 extralimital species and subspecies whose diagnostic characters are given in the "keys", and their principal synonymy (full synonymy in case of the genera) given in footnotes.

Acknowledgments are due to the same individuals and institutions as those mentioned in previous volumes for the loan of specimens needed in the preparation of the present one; also to Dr. Jonathan Dwight, jr., of New York City; Dr. L. C. Sanford, of New Haven, Connecticut; Mr. Harry S. Swarth, of Los Angeles, California; Mr. A. B. Howell, of Covina, California, and the Museum of Vertebrate Zoology (University of California), the latter through Mr. Joseph Grinnell, Director.

To Dr. Charles W. Richmond, Acting Curator of the Division of Birds, U. S. National Museum, the author is indebted for the privilege of free access to his unique and extremely valuable card-catalogue collection of references to the first publication of generic, specific, and subspecific names, for information concerning puzzling questions of nomenclature, and invaluable help in reading proof sheets; and to Mr. J. H. Riley, Aid in the Division of Birds, for assistance in various ways, especially the measuring of several thousands of specimens.

The original drawings of the outline figures illustrating generic details (Pls. I-XXXVI), except those previously published, were made by Miss Ruth G. Collette, of Washington, D. C.

ROBERT RIDGWAY.

FEBRUARY 4, 1914.

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51. <i>Antrostomus</i> Bonaparte.....	XXVI	1, 2	503
52. <i>Stenopsis</i> Cassin.....	XXVII	1	497
53. <i>Phalænoptilus</i> Ridgway.....	XXVIII	1	547
54. <i>Siphonorhis</i> Selater.....	XXVIII	2	495
55. <i>Nyctagreu</i> s Nelson.....	XXIX	1	556
56. <i>Chordeiles</i> Swainson.....	XXIX	2	559
57. <i>Speotyto</i> Gloger.....	XXIX	3	812
58. <i>Nyctibius</i> Vieillot.....	XXX	1	584
59. <i>Glaucidium</i> Boie.....	XXX	2	779
60. <i>Tyto</i> Billberg.....	XXXI	1	600
61. <i>Cryptoglaux</i> Richmond.....	XXXI	2	622
62. <i>Asio</i> Brisson.....	XXXII	1, 2	652
63. <i>Rhinoptynx</i> Kaup.....	XXXII	3	670
64. <i>Lophostrix</i> Lesson.....	XXXIII	1	732
65. <i>Ciccaba</i> Wagler.....	XXXIII	2	759
66. <i>Pseudoscops</i> Kaup.....	XXXIII	3	674
67. <i>Gymnasio</i> Bonaparte.....	XXXIII	4	676
68. <i>Strix</i> Linnæus.....	XXXIV	1	639
69. <i>Scotiaptex</i> Swainson.....	XXXIV	2	634
70. <i>Bubo</i> Duméril.....	XXXV	1	736
71. <i>Otus</i> Pennant.....	XXXV	2	681
72. <i>Micropallas</i> Coues.....	XXXV	3	806
73. <i>Nyctea</i> Stephens.....	XXXVI	1	767
74. <i>Surnia</i> Duméril.....	XXXVI	2	772
75. <i>Pulsatrix</i> Kaup.....	XXXVI	3	754

# THE BIRDS

OF

## NORTH AND MIDDLE AMERICA.

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By ROBERT RIDGWAY,  
*Curator, Division of Birds.*

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### Part VI.

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#### Suborder PICARIÆ.

#### PICARIAN BIRDS.

- > *Picinæ* NITZSCH, Syst. Pterylog., 1840, 132 (Capitonidæ+Bucconidæ+Ramphastidæ+Picidæ).
- =? *Phlæodrominæ* A. MILNE-EDWARDS, Ois. Foss., ii, 1867-1871.
- > *Picariæ* (not of Nitzsch, 1820, except in small part only) GARROD, Proc. Zool. Soc. Lond., 1874, 117 (Picidæ+Ramphastidæ+Capitonidæ).
- > *Coccyges zygodactylæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104 (Galbulidæ+Bucconidæ+Ramphastidæ).
- > *Zygodactylæ* (not *Zygodactyli* Vieillot, 1816) SCLATER, Ibis, 1880, 402 (excludes Pici).
- = *Scansores* (not of Illiger, 1811) SEEBOHM, Classif. Birds, 1890, pp. vii, xi, 6.
- > *Scansores* SHARPE, Rev. Classif. Birds, 1891, 83 (excludes Galbulæ and Pici).
- > *Piciformes* SHARPE, Rev. Classif. Birds, 1891, 84 (excludes Capitones and Ramphastides).
- = *Picoideæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 412.
- > *Picine Scansores* SEEBOHM, Classif. Birds, 1890, 6 (excludes Galbulæ).
- > *Pici* (not of Meyer and Wolf, 1810) FUEBRINGER, Unters. Morph. Syst. Vög., 1888, 1567 (excludes Galbulæ).
- = *Pici* GADOW, in Bronn's Thier-Reich, Vög., ii, 1893, 259, 301; Classif. Vertebr., 1898, pp. xv, 37.—BEDDARD, Struct. and Classif. Birds, 1898, 183.—KNOWLTON, Birds of the World, 1909, 50.

Antiopelemous and zygodactylous Coraciiform birds with myological formula AXY or AX, flexor tendons of type VI (in this respect unique), hypotarsus complex, and spina interna absent.

Palate saurognathous or schizo-ægithognathous (Pici), ægithognathous or ægitho-desmognathous (Capitones) or desmognathous (Galbulæ and Ramphastides); basipterygoid processes absent; vomer present or absent; coracoids separated; cervical vertebræ 14; metasternum 4-notched or with 4 foramina; spina externa present, forked (Galbulæ, Pici) or simple (Capitones, Ramphastides); syrinx tracheo-bronchial; two carotid arteries (Galbulæ) or only one



(other superfamilies); cæca absent (except in Galbulæ); flexor tendons of type VI, the tendon of the flexor hallucis sending a strong vinculum to that of the flexor perforans digitorum, the tendon of which goes to the third toe only; intestinal convolutions (so far as known) of type VII; semitendinosus muscle present; accessory femoro-caudal muscle absent; dorsal pteryla not forked between shoulders; adult downs absent; aftershaft present (but sometimes rudimentary); oil-gland tufted (*Pici*, *Capitones*, *Ramphastides*) or naked (*Galbulæ*); secondaries quinto-cubital; young gymnopædic and nidicolous.

## KEY TO THE SUPERFAMILIES OF PICARIÆ.

- a. Temporal fossæ very deep; thoracic hæmapophyses without lateral ventral enlargements; furcula without hypocleideum; ectepicondyloid process of humerus present; only one carotid artery (the left); cæca absent; oil-gland tufted; wing-coverts oscinine (a row of proximally overlapping middle coverts present).
- b. Palate saurognathous or ægitho-schizognathous; lateral halves of vomer separated; processus angularis mandibulæ present (short); clavicles united to form a furculum; manubrial rostrum bifurcate; myological formula AX; tongue extensile ..... **Pici** (p. 2).
- bb. Palate desmognathous or ægithognathous; lateral halves of vomer coalesced; processus angularis mandibulæ absent; clavicles separated; manubrial rostrum pointed; myological formula AXY; tongue not extensile.
- c. Aftershaft present; palate usually ægithognathous (sometimes desmognathous); vomer bifurcate; spina externa long, somewhat forked; bill not highly specialized, little if any longer than head (usually shorter), broad basally, the culmen neither strongly decurved nor uncinately terminally... **Capitones** (p. 310).
- cc. Aftershaft wanting or rudimentary; palate desmognathous; vomer truncate; spina externa long, not paired; bill highly specialized, much longer than head, compressed throughout, the culmen strongly decurved terminally, and distinctly uncinately..... **Ramphastides** (p. 327).
- aa. Temporal fossæ shallow or moderately deep; thoracic hæmapophyses with lateral ventral enlargements; furcula with hypocleideum; ectepicondyloid process of humerus absent; two carotid arteries; cæca present; oil-gland nude; wing-coverts nonoscinine (the proximally overlapping middle covert row wanting or imperfectly developed) ..... **Galbulæ** (p. 359).

## Superfamily PICI.

## WOODPECKERS AND WRYNECKS.

- =*Sagittilingues* ILLIGER, *Prodromus Orn.*, 1811, 205.
- =*[Zygodactylæ]* *Macroglossi* VIEILLOT, *Analyse*, 1816, 26.
- =*Pici* (not of Meyer and Wolf, 1810) WAGLER, *Nat. Syst. Amphib. mit Vorang. Säugth. und Vög.*, 1830, 81.—CARUS, *Handb. Zool.*, i, 1868-75, 242.—SUNDEVALL, *Met. Nat. Av. Disp. Tent.*, i, 1872, 72.—SCLATER, *Ibis*, 1880, 350.—SHARPE, *Rev. Classif. Birds*, 1891, 84; *Hand-list*, ii, 1900, 200.
- =*Picidæ* BONAPARTE, *Saggio dist. An. Vert.*, 1831, 40; *Consp. Av.*, i, 1850, 112.—CABANIS and HEINE, *Mus. Hein.*, iv, 1863, 1.—FUERBRINGER, *Unters. Morph. Syst. Vög.*, ii, 1888, 1392.—LILLJEBORG, *Proc. Zool. Soc. Lond.*, 1866, 16, 19.
- =*Celeomorphæ* HUXLEY, *Proc. Zool. Soc. Lond.*, 1867, 467.
- =*Piciformes* COUES, *Key N. Am. Birds*, 2d ed., 1884, 476.
- =*Saurognathæ* PARKER, *Proc. Zool. Soc. Lond.*—COPE, *Am. Nat.*, xxiii, Oct., 1889, 872.
- =*Picoidei* COPE, *Am. Nat.*, xxiii, Oct., 1889, 872, 873.

Saurognathous (or ægitho-schizognathous) zygodactyle Coraciiform birds with the processus angularis mandibulæ present, lateral halves of the vomer separate, ectepicondylloid process of humerus present, manubrial rostrum bifurcate, myological formula AX, and tongue extensile.

Basipterygoid processes absent; maxillo-palatines small, not coalesced; vomer slender, pointed, split (the lateral halves separated); manubrial rostrum of sternum bifurcate; no interclavicle; only one carotid artery (the left); cæca absent or rudimentary; oil-gland tufted; femoro-caudal and semitendinosus muscles present; ambiens and accessory femoro-caudal muscles absent; spinal pteryla well-defined on neck, forked on lower (not upper) back; sides of breast with two distinct pterylæ, united at shoulders; primaries 10, the tenth (outermost) much reduced; rectrices 12, but outer pair greatly reduced or rudimentary (concealed by coverts); adult downs absent; young nidicolous and gymnopædic.

The Pici are a numerous but sharply circumscribed group of birds, whose nearest relatives are undoubtedly the Capitones (Barbets). They differ from all other birds in the structure of the tongue and (though to a less extent) the bill, together with related parts, which are highly specialized for adaptation to their peculiar mode of obtaining their food. The bill is a combined hammer and chisel, and serves admirably for the puncturing and excavation of trees, both for the purpose of reaching insects which are hidden in the wood and preparing a cavity for nesting purposes. The tongue is a more or less extensile barbed lance or spear, with which they are able to explore the burrow of a grub, transfix it, and draw it within the mouth; and its fleshy portion is covered with a viscid secretion which entraps insects with which it comes in contact.

Their young are, as in the case of other Coraciiformes (except Nycticoraciæ and Striges) gymnopædic, and though nidicolous, are able to leave the nest and climb about the tree in which they were reared for some time before they are capable of flight.

According to Mr. Brewster,<sup>a</sup> "the young of most, if not all, of the Woodpeckers regularly moult the wing and tail feathers with the rest of the first plumage. No exceptions of this rule occur among large series of the common North American species examined, and it may probably be found to hold good among all excepting, perhaps, some highly specialized groups. Another peculiar feature in the early development of the species most thoroughly investigated, and one which is perhaps common to all the members of this family, is the fact that a certain portion of the females in first plumage possess to a greater or less degree the adornments which in more advanced stages

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<sup>a</sup> Bull. Nutt. Orn. Club, iii, 1878, 179, footnote.

are peculiar to the males alone, and which are lost with the first moult. Marked examples of this are afforded by young females of *Colaptes auratus*, *Dryobates pubescens*, and others, of which detailed descriptions are given in the text."

#### KEY TO THE FAMILIES OF PICI.

- a. Inner front toe much longer, its claw reaching to or beyond base of claw of outer front toe, united to outer toe by at least entire length of basal phalanx of the latter; planta tarsi taxaspidean except in Picumninæ (holaspidean); claws relatively very large and strongly curved; tenth (outermost) primary one-fourth to two-thirds as long as ninth, the latter always shorter than seventh; tail much less than three-fourths as long as wing or else rectrices rigid and acuminate; rectrices rigid and acuminate or else (Picumninæ); tenth primary more than one-third as long as ninth, the latter much shorter than secondaries; culmen nearly as long to much longer than tarsus; nostrils lateral (not nearer to culmen than to tomia), not bordered beneath by membrane or else with a narrow membrane all round; mesorhinium broad; gonys longer than mandibular rami (often twice, sometimes nearly four times as long; coloration not Caprimulgine.....**Picidæ** (p. 4).
- aa. Inner front toe much shorter, its claw falling considerably short of base of claw of outer toe, united to outer toe by much less than whole length of basal phalanx of the latter; planta tarsi holaspidean; claws relatively small and slightly curved; tenth (outer) primary minute, only one-sixth as long as ninth, the latter as long as seventh; tail three-fourths as long as wing, the rectrices soft, broadly rounded terminally; culmen much shorter than tarsus; nostrils close to culmen, opening vertically, bordered below by a very broad membrane occupying greater part of the relatively very large nasal foræ, the mesorhinium extremely narrow; gonys shorter than mandibular rami; coloration Caprimulgine.....**Jynxidæ** (extralimital).<sup>a</sup>

### Family PICIDÆ.

#### THE WOODPECKERS.

=*Dendrocolaptæ* MERREM, Tent. Syst. Av., 1813.

=*Picidæ* CABANIS, in Wiegmann's Archiv für Naturg., 1847, pt. i, 347.—STEJ-  
NEGER, Stand. Nat. Hist., iv, 1885, 412, 423.—SHARPE, Hand-list, ii,  
1900, 200.

<*Picidæ* CARUS, Handb. Zool., i, 1868-75, 245 (excludes Picumnidæ).

=*Picinae verae* NITZSCH, Syst. Pterylog., 1840, 136.

=*Pici genuini* SUNDEVALL, Met. Nat. Av. Disp. Tent., i, 1872, 72 (English trans-  
lation, 1889, 143).

=*Picinae* GADOW, in Bronn's Thier-Reich, Vög., ii, 1891, 269.

=*Picini* LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 19.

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<sup>a</sup> = *Yunginæ* Bonaparte, Prodr. Syst. Orn., 1840, 17; Consp. Av., i, 1850, 112; Baird, Rep. Pacific R. R. Surv., ix, 1858, 79; Baird, Brewer, and Ridgway, Hist. N. Am. Birds, ii, 1874, 491. = *Iyngidæ* CARUS, Handb. Zool., i, 1868, 245; Dubois, Mém. Soc. Zool. France, iv, 1891, 115. = *Iunginae* Cabanis and Heine, Mus. Hein., iv, th. ii, 1863, 1. = *Iynginæ* Sundevall, Met. Nat. Av. Disp. Tent., ii, 1873, 74 (English translation, 1889, 146); Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 559; Gadow, Bronn's Thier-Reichs, Vög., ii, 1893, 269; Sharpe, Hand-list, ii, 1900, 236. = *Yungini* Lilljeborg, Proc. Zool. Soc. Lond., 1866, 19. > *Pici improprii* Sundevall, Met. Nat. Av. Disp. Tent., ii, 1873, 74 (includes *Picumnus*!).

An exclusively Old World (western Palæarctic and Ethiopian) family, represented by a single genus (*Jynx* Linnæus) of four species.



Saurognathous (or ægitho-schizognathous), zygodactylous Coraciiformes (Pici) with tongue more or less (usually greatly) extensile, cylindrical, but with tip horny and barbed; rectrices twelve, but the lateral pair rudimentary or greatly reduced in size.

Vomer split (the lateral halves separated); basipterygoid processes absent; maxillo-palatines small, not coalesced; manubrial process of sternum bifurcate; femoro-caudal and semitendinosus muscles present, ambiens and accessory femoro-caudal muscles absent; caeca absent or rudimentary; left carotid artery, only, present; spinal pterylla well-defined on neck, without interscapular fork, but enclosing a dorsal apertium; sides of breast with two distinct pteryllæ, united at shoulders; oil-gland tufted; outermost (tenth) primary small, and wings otherwise essentially Oscinine.

In addition to the above-mentioned characters it may be stated that the tongue itself is quite small, flat, and short, acute and horny, usually armed along the edges with recurved hooks. The horns of the hyoid apparatus are generally very long, and curve round the back of the skull, frequently to the base of the bill, playing in a sheath, when the tongue is thrown forward out of the mouth to transfix an insect or withdraw it from a cavity which can not be otherwise penetrated.<sup>a</sup>

There are twelve rectrices, of which the outer is, however, very small and rudimentary (lying concealed between the outer and adjacent feathers), so that only ten are usually counted. The tail is nearly even, or cuneate, never forked, the shafts very rigid in the true Woodpeckers (Picinæ); soft in Picumninæ. The outer primary is generally very short, or spurious, but not wanting. The bill is chisel or wedge shaped, with sharp angles and ridges and usually straight culmen; sometimes the culmen is a little curved, in which case it is smoother or without distinct ridges or grooves. The tarsus is scutellate anteriorly, at least in part, the posterior side with much smaller, usually more or less polygonal, scales in Subfamily Picinæ or with a single row of quadrate scutella (in Subfamily Picumninæ). The toes are paired (two directed forward and two backward, the outer, or fourth toe, being permanently reversed), or else there is only one posterior toe (the outer), the first toe, or hallux being wanting. The claws are compressed, broad (vertically), strongly curved, very strong, and acute.

As implied by the vernacular name of the group, the Woodpeckers are preeminently distinguished for their habit of pecking the bark and decayed wood of trees, in their search for grubs and other insects, and for excavating deep cavities in the trunks or branches of trees in which to deposit their eggs. While by no means peculiar to the

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<sup>a</sup> For further details concerning the structure of the tongue, see Stejneger, *Standard Natural History*, iv, 1885, 424, 425.

group, these habits are nevertheless more highly developed and more universal in the Woodpeckers than in any other birds. The true Woodpeckers (*Picinæ*) are all truly scansorial, and in clinging to the side of a tree or branch or ascending the same support themselves to a great extent by using the rigid tail as a prop. Although to a great extent insectivorous the Woodpeckers also feed to a great extent on fruits (both large and small), or even grain, especially when in the soft or unripe stage. The species of one genus (*Sphyrapicus*) subsist largely on the soft inner bark or cambium and sugary sap of certain trees and often do considerable damage, especially to fruit trees. All other kinds, however, are decidedly beneficial, through their destruction of wood-destroying beetles and their larvæ, grasshoppers, and other predaceous insects.

The eggs of Woodpeckers are, like those of other Picarian birds, invariably immaculate white, usually with a very glossy or polished surface, and are deposited on the chips at the bottom of the excavation, no attempt at constructing a true nest being made. In very thinly wooded or treeless countries the few species of Woodpeckers which occur there are, from necessity, more or less terrestrial, making their excavations in banks of earth or even depositing their eggs in cavities already existing, as the brain-cavity of the skull of a large mammal, as a horse or ox.

Woodpeckers are found in all wooded portions of the world except the island of Madagascar and the entire Australian Region.<sup>a</sup> The group is nearly equally represented in the two hemispheres, the Western claiming about twenty-two genera and two hundred and twenty-five species (including subspecies), the Eastern twenty-seven genera and a little more than two hundred species and subspecies. Three genera are of circumpolar range, with sixty-three American (mostly Nearctic) and twenty-nine Palæarctic forms.

#### KEY TO THE GENERA OF PICIDÆ.

- a. Planta tarsi taxaspidean; rectrices rigid, with strong and elastic shafts, more or less contracted or acuminate terminally. (*Picinæ*.)
- b. Outer hind toe not longer than outer front toe.
- c. Maxilla without any distinct lateral ridge or groove; tip of bill pointed (not chisel-shaped); tarsus nearly as long as longest toe with claw, the toes relatively more slender and claws weaker. (*Colaptæ*.)
- d. Nostrils more or less covered by small antrorse prefrontal feathers.
- e. Bill little if any longer than head, the gonys not longer (usually shorter) than mandibular rami; tail not less than two-thirds as long as wing.
- f. Bill more slender, appreciably decurved terminally, the gonys not ascending terminally nor prominent basally; a large black jugular patch; basal half, at least, of under side of tail yellow, orange, or red.

*Colaptes* (p. 12).

<sup>a</sup> Woodpeckers occur, however, in Celebes and Flores, outlying islands of the Australian Region, "which are situated so close to the Indo-Malayan islands that it is safe to conclude that their woodpeckers are comparatively recent immigrants from the latter." (Stejneger, *Standard Nat. Hist.*, iv, 425.)



*ff.* Bill stouter, not decurved terminally, the gonys ascending terminally and prominent basally; no black jugular patch; under side of tail wholly black (except whitish bars or spots on lateral rectrices).

**Soroplex** (extralimital).<sup>a</sup>

*ee.* Bill decidedly to much longer than head, the gonys decidedly to much longer than mandibular rami; tail less than two-thirds as long as wing.

**Pituipicus** (extralimital).<sup>b</sup>

*dd.* Nostrils wholly exposed (no antrorse prefrontal plumes).

**Nesocoeleus** (p. 39).

*cc.* Maxilla with a more or less distinct lateral supra-nasal ridge or pre-nasal groove; tip of bill more or less chisel-shaped (sharply compressed laterally and truncate or sub-truncate vertically); tarsus decidedly shorter than longest toe with claw, the toes relatively stouter and claws stronger.

*d.* Lateral ridge or groove of maxilla less distinct (usually obvious only on basal half or less); bill relatively narrower, its width at middle of nostrils not much if at all greater than its depth at same point. (*Melanerpes*.)

*e.* Orbits less extensively and not completely naked or else (*Centurus*, part) upper parts conspicuously barred with black and white.

*f.* Plumage of under parts not hair-like (except, sometimes, on throat and chest or on abdomen alone).

*g.* Outermost (tenth) primary little more (usually much less) than one-third as long as ninth, narrower, straighter, usually more or less pointed; plumage not wholly blackish.

*h.* Postnasal and premalar plumes much less developed; feathers of breast not broad and imbricated or else (*Tripsurus*, part) feathers of abdomen hair-like, red.

*i.* Plumage of throat hair-like, red; back and wings uniform glossy bluish or greenish black (the secondaries sometimes white); ninth primary much longer than fourth.....**Melanerpes** (p. 41).

*ii.* Plumage of throat normal (soft and blended), not red; back, wing-coverts, and secondaries regularly and conspicuously barred with black and white; ninth primary usually much shorter than fourth.....**Centurus** (p. 48).

*hh.* Postnasal and premalar plumes developed into dense tufts; feathers of breast broad and imbricated, those of abdomen soft, blended white.....**Balanosphyra** (p. 100).

*gg.* Outermost (tenth) primary much more than one-third as long as ninth, broad, rounded at tip, distinctly bowed; plumage wholly black (tinged with red on under parts).....**Linneopicus** (p. 112).

*ff.* Plumage of under parts (except under tail-coverts) hair-like.

**Asyndesmus** (p. 113).

*ee*  
*dd.* Orbits completely and extensively naked.

*†.* Head and under parts not white; abdomen red; adult male with red on crown (sometimes on nape also); smaller (wing less than 125 mm.).

**Tripsurus** (p. 117).

<sup>a</sup> *Soroplex* Gloger, Hand- und Hilfsbuch der Naturg., 1842, 198. (Type, *Picus campestris* Vieillot.)—*Geopicos* Malherbe, Mém. Acad. Metz, xxx, 1849, 357. (Type, *Picus campestris* Vieillot.)—*Malherbipicus* Bonaparte, Ateneo Italiano, ii, 1854, 126. (Type, *Picus campestris* Vieillot.)—*Theiopicus* Malherbe, Mon. Picid., Introd., 1861, p. liii. (Type, *Picus campestris* Vieillot.)—*Pediopipo* Sundevall, Consp. Av. Picin., 1866, 116 (to replace *Malherbipicus*, on grounds of purism). Eastern Brazil to s. Argentina, Bolivia, and Peru; five species.

<sup>b</sup> *Pituipicus* Bonaparte, Ateneo Italiano, ii, 1854, 126. (Type, *Picus chilensis* Garnot and Lesson=*P. pitius* Molina.) Chile; monotypic.

- ee.* Head and under parts white; abdomen light yellow; adult male without red on crown, but with a nuchal band of light yellow; larger (wing more than 150 mm.).....**Leuconerpes** (extralimital).<sup>a</sup>
- cc.* Lateral ridge or groove of maxilla more distinct, obvious for greater part of length of maxilla; bill relatively broader, its width at middle of nostrils decidedly greater than its depth at same point.
- d.* Smaller (wing less than 170 mm.); back not black.
- e.* Nostrils more or less covered by antrorse bristly prefrontal feathers; bill more compressed anteriorly; pileum at least partly red, not crested; back plain yellowish olive-greenish; under parts barred with olive and yellowish.....**Chloronerpes** (p. 124).
- ee.* Nostrils wholly exposed (no trace of antrorse prefrontal feathers); bill less compressed anteriorly; pileum without red, usually crested; back rufous or chestnut (with or without black bars), plain yellowish buff, or barred with black and yellow or olive-brown and buff. (*Celeæ.*)
- f.* Posterior outer toe decidedly shorter than anterior outer toe; culmen slightly convex to nearly straight, and not sharply (though very distinctly) ridged; back and under parts not plain buff-yellow.
- g.* Bill much shorter (decidedly shorter than head) and stouter.  
**Celeus** (p. 138).
- gg.* Bill much longer (about as long as head) and more slender.  
**Cerchneipicus** (extralimital).<sup>b</sup>
- ff.* Posterior outer toe nearly as long as anterior outer toe; culmen strongly convex, compressed into a sharp (almost knife-like) ridge; back and under parts plain buff-yellow.....**Crocomorphus** (extralimital).<sup>c</sup>
- dd.* Larger (wing 180–250 mm.); back black (sometimes with a white stripe along each side). (*Picæ.*)
- e.* Bill less depressed, its width at middle of nostrils not greater than its depth at base of exposed culmen; antrorse prefrontal plumes small, not covering nostrils; plumage of neck shorter, more scant, the feathers of harsher texture; under parts of body (except chest) pale brownish or dull yellowish barred or spotted with dusky.....**Ceophlæus** (p. 146).
- ee.* Bill more depressed, its width at middle of nostrils much greater than its depth at base of exposed culmen; antrorse prefrontal plumes large, completely covering nostrils; plumage of neck longer, softer, blended; under parts uniform blackish.
- f.* Conspicuously crested; outermost primary normal; two stripes on side of head, a stripe along side of neck, under wing-coverts, and proximal portion of inner web of remiges, white or yellowish white.

**Phlæotomus** (p. 153).

<sup>a</sup> *Leuconerpes* Swainson, Classif. Birds, ii, 1837, 310. (Type, *Picus candidus* Otto).—*Colombpicus* Malherbe, Nouv. Classif. Picinées, etc., July, 1850, 45. (Type, *Picus dominicensis* Vieillot=*P. candidus* Otto).—*Phymatoblepharus* Reichenbach, Handb. Scansores, Picinæ, 1854, 379. (Type, *Picus candidus* Otto).—*Columbpicus* (emendation) Strickland, Jardine's Contr. Orn., no. 1, for 1851 [pub. Feb., or later, 1851], 18, in text; Malherbe, Mon. Pici., Introd., 1861, pp. xlviii, liii. Southern Brazil, Argentina, etc.; monotypic. (Placed in *Melanerpes* by Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 140, 148, but obviously not belonging there.)

<sup>b</sup> *Cerchneipicus* Bonaparte, Ateneo Italiano, ii, 1854, 123. (Type, as fixed by Gray, 1855, *Picus tinnunculus* Wagler).—*Cerchneopipo* (emendation) Sundevall, Consp. Av. Picin., 1866, 116. Guianas to Paraguay and upper Amazon Valley; three species.

<sup>c</sup> *Crocomorphus* Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 439. (Type, *Picus flavus* Müller.) Amazon Valley, Guianas, Venezuela, and Trinidad; two species.

- ff.* Not crested, outermost primary subfalcate; plumage wholly black except red portion of head (no white).....**Picus** (extralimital).<sup>a</sup>
- bb.* Outer hind toe longer than outer front toe. *Dryocopus*
- c.* Two posterior toes; bill not excessively depressed.
- d.* Four middle rectrices much narrower than the rest, with webs strongly deflected, their shafts very large and broadly and deeply grooved on under side. (*Campephilæ*.)
- e.* Gonys nearly four times as long as mandibular rami, its base covered by the long, closely appressed, antrorse feathers of chin; bill broad and much depressed, much broader than deep at anterior end of nostrils, abruptly contracted (in vertical profile) terminally; tenth (outermost) primary less than half as long as ninth, very narrow (one-tenth as wide as long); outer webs of secondaries mostly white; larger (wing 230–356 mm.).....**Campephilus** (p. 164).
- ee.* Gonys much less than four (often less than three) times long as mandibular rami, its base not covered by feathers of chin, the latter not distinctly antrorse or else much shorter; bill much less broad and depressed, its width at anterior end of nostrils little if any greater than its depth at same point, or else (*Cniparchus*, part) gradually tapering to the tip (in vertical profile); tenth (outermost) primary more than half as long as ninth, broader (one-eighth to one-sixth as wide as long); outer webs of secondaries black; smaller (wing not more, usually much less, than 220 mm.).
- f.* Gonys more than three times as long as mandibular rami; longer primaries narrow, straight, the tenth (outermost) but little more than half as long as ninth, falcate; tail nearly three-fourths as long as wing; crest pointed, recurved; inner web of inner secondaries white. **Ipocrantor** (extralimital).<sup>b</sup>
- ff.* Gonys less (usually much less) than three times as long as mandibular rami; longer primaries broad, more or less incurved terminally, the tenth (outermost) much more than half as long as ninth, broad (more than one-sixth as wide as long), not falcate; tail less than two-thirds as long as wing; crest not pointed, or else not recurved (usually "bushy"); inner webs of inner secondaries black.
- g.* Wing longer and more pointed, the longer primaries exceeding secondaries by more than one-fifth the length of wing; tenth (outermost) primary relatively narrower, at least terminally; rump black; inner webs of remiges with proximal portion immaculate white or yellow, or else proximal portion of primaries (only) cinnamon-tawny. **Scapanus** (p. 170).
- gg.* Wing shorter and more rounded, the longer primaries exceeding secondaries by less than one-fifth the length of wing; tenth (outermost) primary relatively broader; rump red or buff (sometimes banded with black); inner webs of remiges broadly banded with white or buff.

<sup>a</sup> *Picus* Linnæus, Syst. Nat., ed. 10, i, 1758, 112. (Type, as fixed by Gray, 1855, *Picus martius* Linnæus.)—*Dryocopus* Boie, Isis, 1826, 997. (Type, *Picus martius* Linnæus.)—*Carbonarius* Kaup, Naturl. Syst., 1829, 131. (Type, *Picus martius* Linnæus.)—*Dryopicos* Malherbe, Mém. Acad. Metz, xxx, 1849, 320. (Type, *Picus martius* Linnæus.)—*Dryotomus* Swainson, Fauna Bor.-Am., ii, 1831, 301, 304. (Type, by orig. designation, *Picus martius* Linnæus.) Palearctic Region. (Monotypic.)

<sup>b</sup> *Ipocrantor* Cabanis and Heine, Mus. Hein., iv, heft ii, July, 1863, 99. (Type, *Picus magellanicus* King. ("Von  $\psi$  (Holzwurm) und  $\kappa\rho\acute{\alpha}\nu\tau\omega\rho$  (Herrscher);" Cabanis and Heine.) Chile; monotypic.



- h.* Tarsus slightly longer than outer hind toe without claw; bill shorter, the exposed culmen decidedly shorter than outer hind toe with claw; crest pointed; interscapulars immaculate buff (like rump and upper tail-coverts); inner web of remiges cinnamon, banded with black; no white on neck; chest barred with black and buff, like other under parts.....**Phloeocastes** (extralimital).<sup>a</sup>
- hh.* Tarsus decidedly longer than outer hind toe without claw; bill longer, the exposed culmen decidedly longer than outer hind toe with claw; crest rounded ("bushy"); interscapulars black (sometimes with a white stripe along each side); inner web of remiges black, with broad bands or spots of white; chest black or crimson.....**Cniparchus** (p. 180).
- dd.* Middle rectrices normal (not narrow, webs not deflected, shafts not deeply grooved beneath). (*Dryobates*.)
- e.* Tail about three-fourths as long as wing, the rectrices very broad; outermost (tenth) primary nearly half as long as ninth; upper parts mostly green.....**Xiphidiopicus** (p. 182).
- ee.* Tail much less than three-fourths (usually less than two-thirds) as long as wing, the rectrices only moderately broad; outermost primary much less than half as long as ninth.
- f.* Wing-tip shorter, the longest primaries exceeding distal secondaries by decidedly less than one-third the length of wing; tenth (outermost) primary larger, more than one-fourth as long as ninth; tarsus shorter than outer hind toe with claw.
- g.* Longest primaries exceeding distal secondaries by less than one-fourth the length of wing.
- h.* Tenth (outermost) primary less than one-third as long as ninth; inner hind toe relatively shorter, the digit and claw together not more than half as long as outer hind toe without claw; back plain olive, orange-russet, or red; outer webs of primaries without white spots; under parts usually barred with whitish and olive or dusky, or, if plain whitish, the upper parts mostly red.  
**Veniliornis** (p. 185).
- hh.* Tenth (outermost) primary more than one-third as long as ninth; inner hind toe relatively larger, the digit and claw together more than half as long as outer hind toe without claw; back spotted, barred, or striped with black and white; rectrices broadly barred with white; outer webs of primaries (also secondaries and wing-coverts) spotted or barred with white; under parts dull white, usually streaked with black.
- i.* Bill stouter, with supranasal ridge and prenasal groove running to tomial edge less than one-third the distance from tip; under parts immaculate (except under tail-coverts); back with white markings longitudinal; no white supra-auricular streak; throat yellow; adult male with a longitudinal mark or streak of red in middle of occiput.....**Trichopicus** (extralimital).<sup>b</sup>

<sup>a</sup> *Phloeocastes* Cabanis, Journ. für Orn., 1862, 176. (Type, *Picus robustus* Vieillot.) ("Φλωγός, Baumrinde u. κσάζω, zerspalten;" Cabanis and Heine.)

<sup>b</sup> *Trichopicus* Bonaparte, Ateneo Italiano, ii, 1854, 123. (Type, as fixed by Gray, 1855, *Picus cactorum* Lafresnaye and D'Orbigny.)—*Cactocraugus* Cabanis and Heine, Mus. Hein., iv, heft 2, June, 1863, 72. (Type, *Picus cactorum* Lafresnaye and D'Orbigny.) Southern Peru to Uruguay, Argentina, etc.; monotypic.

This genus was merged with *Melanerpes* by Hargitt (Cat. Birds Brit. Mus., xviii, 1890, 139), but obviously is much more closely allied to the groups near which it is here placed.



- ii. Bill more slender, with supranasal ridge and prenasal groove running to tomial edge at one-third, or more, the distance from tip of maxilla; under parts conspicuously streaked, the throat not yellow; back with white markings transverse; a white supra-auricular stripe; adult males with a red nuchal band or a red streak along each side of occiput.

*Dyctiopicus* (extralimital).<sup>a</sup>

- gg. Longest primaries exceeding distal secondaries by more than one-fourth the length of wing.

- h. Gonys at least twice as long as mandibular rami; under parts white or pale brownish (with or without markings); head broadly striped with white and black; lateral rectrices white (with or without black spots or bars).....*Dryobates* (p. 194).

- hh. Gonys decidedly less than twice as long as mandibular rami; under (as well as upper) parts uniform black, the head, foreneck, and part of primaries white; adult male with a red nuchal band.

*Xenopicus* (p. 264).

- ff. Wing-tip longer (longest primaries exceeding distal secondaries by one-third, or more, the length of wing); tenth (outermost) primary not more than one-fourth as long as ninth; tarsus as long as or longer than outer hind toe with claw.

- g. Gonys less than twice (about one and a half times) as long as mandibular rami; supranasal ridge higher, running out to edge of maxilla at a point about one-third the distance from tip; tarsus not longer than outer hind toe with claw; longest primaries exceeding distal secondaries by more than one-third the length of wing; middle rectrices broadly acuminate; tongue distinctly extensile.

*Phrenopicus* (p. 268).

- gg. Gonys two and a half to three times as long as mandibular rami; supranasal ridge lower, running out to edge of maxilla at or posterior to middle; tarsus longer than outer hind toe with claw; longest primaries exceeding secondaries by not more than one-third the length of wing; middle rectrices narrowly and more abruptly acuminate; tongue scarcely extensile.....*Sphyrapicus* (p. 272).

- cc. Only one (the outer) posterior toe; inner anterior toe nearly as long as the outer one; bill extremely depressed. (*Picoideæ*).....*Picoides* (p. 289).

- aa. Planta tarsi holaspidean; rectrices soft, with slender (normal) shaft and broadly rounded tip. (*Picumninæ*).<sup>b</sup>

- b. Nostril nearer to commissure than to culmen; culmen and commissure nearly straight; gonys much longer than mandibular rami; outermost (tenth) primary less than half as long as ninth; smaller (wing less than 60 mm.); inner web of middle pair of rectrices white or pale yellow.

- c. Culmen longer than outer hind toe (without claw), the bill more slender; no whitish nor dusky stripes on side of head.....*Picumnus* (p. 302).

- cc. Culmen not longer than outer hind toe without claw, the bill thicker and more conical; two whitish and two dusky stripes on side of head.

*Vivia* (extralimital).<sup>c</sup>

<sup>a</sup> *Dyctiopicus* Bonaparte, *Ateneo Italiano*, ii, 1854, 123. (Type, as fixed by Gray, 1855, *Picus bicolor* Gmelin=*P. mixtus* Boddaert.)—*Dictyopipo* (emendation) Cabanis and Heine, *Mus. Hein.*, iv, heft 2, July 1, 1863, 74. Southern Brazil and Paraguay to Chile and Peru; three species.

<sup>b</sup> *Picumnidae* Carus, *Handb. Zool.*, i, 1868-75, 245.

<sup>c</sup> *Vivia* Hodgson, *Journ. Asiatic Soc. Bengal*, vi, pt. i, 1837, 107. (Type, *V. nipalensis* Hodgson=*Picumnus innominatus* Burton.)—*Pipiscus* Cabanis and Heine, *Mus. Hein.*, iv, heft ii, April, 1863, 9. (Type, *Picumnus innominatus* Burton.) Indo-Malayan Region; two species. (Very close to *Picumnus*, but I think should be separated. I have not seen *V. chinensis* Hargitt, however.)

- bb. Nostril much nearer to culmen than to commissure; culmen and commissure slightly but distinctly decurved; gonys but little longer than mandibular rami; outermost primary more than half as long as ninth; larger (wing 70 mm.); no white or pale yellow on middle rectrices.....*Nesocittes* (p. 307).

### Genus COLAPTES Vigors.

*Colaptes* VIGORS, Trans. Linn. Soc., Lond., xiv, pt. iii, 1825, 457. footnote. (Type, by original designation, *Cuculus auratus* Linnæus.)

*Cucupicus* LESSON, Man. d'Orn., ii, 1828, 116. (Type, *Cuculus auratus* Linnæus.)

*Craugus*<sup>a</sup> BILLBERG, Synop. Faunæ Scand., i, part 2, 1828, tab. A. (Type, *Cuculus auratus* Linnæus.)

Rather large Picidæ (wing 127–178 mm.) without any distinct lateral ridge or groove on maxilla, tip of bill pointed (not chisel-shaped), tarsus nearly as long as outer hind toe with claw, toes relatively slender and claws weak, shafts of remiges and rectrices bright yellow, orange, or red, back brown barred with black, under parts whitish spotted with black and with a conspicuous jugular crescentic patch of black, the adult males with a broad malar stripe of black or red.<sup>b</sup>

Bill about as long as head, rather slender, slightly but distinctly decurved terminally, rather broad and depressed basally, its tip obtusely pointed (not wedge-shaped); culmen forming a distinct ridge; gonys not longer (sometimes decidedly shorter) than mandibular rami, straight or sometimes faintly concave, distinctly ridged, its base sometimes slightly prominent; sides of maxilla without any distinct ridge or groove. Nostril broadly oval or roundish, rather large, concealed by a flattened tuft of small, bristle-like, antrorse prefrontal feathers; no distinct rictal, prefrontal, premalar, nor mental bristles. Orbits feathered, except a narrow space beneath lower eyelid and immediately in front of eye. Wing rather long, with longest primaries exceeding secondaries by about one-fourth the length of wing; fifth or sixth primaries longest, the ninth shorter than fourth (sometimes shorter than second), the tenth (outermost) more than one-third as long as ninth. Tail about two-thirds as long as wing, slightly graduated, the rectrices broad but abruptly acuminate terminally. Tarsus equal to or longer than outer hind toe with claw, but shorter than outer front toe with claw; the toes relatively rather slender and claws rather weak.

*Coloration*.—Shafts of remiges and of at least basal half of rectrices bright yellow, orange, or red; back, wing-coverts, and secondaries brownish barred with black; rump white (sometimes spotted with black); pileum plain gray, brown, or rufescent; throat plain gray or

<sup>a</sup> *Κραυρός*, a woodpecker.

<sup>b</sup> This diagnosis and the generic description which follows is based entirely on the Nearctic species, the half dozen South American species which are usually referred to *Colaptes*, being almost certainly distinct generically. (See p. 7.)

vinaceous; under parts of body whitish, light pinkish, or pale vinaceous, spotted with black, the chest with a conspicuous crescentic patch of black; adult males with a broad malar stripe of black or bright red.

*Range*.—The whole of North America (except treeless Arctic districts), south to northern Nicaragua; Cuba; island of Grand Cayman, south of Cuba. (Five species.)

KEY TO THE SPECIES AND SUBSPECIES OF COLAPTES.

- a. Shafts of remiges and rectrices and under surface of tail (except distal portion) yellow; inner webs of remiges with proximal portion (extensively) yellow.
- b. A red nuchal crescent or band; throat and foreneck vinaceous; under surface of rectrices narrowly (sometimes only partly) black distally; adult males with malar stripe black.
- c. Center of rump immaculate white; pileum brownish gray. (*Colaptes auratus*.)
  - d. Smaller (wing averaging about 150 mm.). (Southeastern United States, north to southeastern Virginia?, southwestern Indiana, southeastern Missouri, etc.).....**Colaptes auratus auratus** (p. 14).
  - dd. Larger (wing averaging 155 mm. or more).
  - e. Smaller (wing averaging 156.3 in male, 155 in female). (Eastern United States, except "Austroriparian" district, Minnesota, North Dakota, etc.) .....**Colaptes auratus luteus** (p. 18).
  - ee. Larger (wing averaging more than 163 mm.). (Northern North America, east of Rocky Mts., from North Dakota, Minnesota, northern Ontario, etc., to Ungava and coast of Bering Sea in Alaska.)
    - Colaptes auratus borealis** (p. 20).
  - cc. Center of rump spotted with black; pileum clear bluish gray. (*Colaptes chrysocaulosus*.)
    - d. Larger (wing 133-146.5, culmen 32.5-36.5); adult male with black malar patch larger and broader. (Cuba.)
      - Colaptes chrysocaulosus chrysocaulosus** (p. 23).
    - dd. Smaller (wing 127-132.5, culmen 29-33); adult male with black malar patch smaller and narrower. (Island of Grand Cayman, south of Cuba.)
      - Colaptes chrysocaulosus gundlachi** (p. 25).
  - bb. No red on nape; throat and foreneck gray; under surface of rectrices broadly black distally; adult male with malar stripe red. (*Colaptes chrysoides*.)
  - c. Smaller (wing averaging less than 144 in male, less than 142 in female; culmen averaging less than 36); coloration darker, with pileum less cinnamonaceous or else the latter darker or more rufescent.
  - d. Coloration lighter, more grayish brown above, with pileum less rufescent; immaculate white area of rump larger, the center of rump never spotted. (Southern Lower California.).....**Colaptes chrysoides chrysoides** (p. 25).
  - dd. Coloration darker, less grayish brown above, with pileum more rufescent; immaculate white area of rump more restricted, the center of rump sometimes spotted. (Northern Pacific coast district of Lower California.)
    - Colaptes chrysoides brunnescens** (p. 27).
  - cc. Larger (wing averaging 148.2 in male, 146.9 in female; culmen averaging 37.8 in male, 36.6 in female); coloration paler, with pileum more cinnamonaceous. (Arizona and southeastern California to southern Sonora.)
    - Colaptes chrysoides mearnsi** (p. 28).
  - aa. Shafts of remiges and rectrices and under side of tail (except distal portion) orange-red or reddish orange; inner webs of remiges (except distal portion) pink or salmon color.



- b. Pileum grayish brown, becoming more rufescent on forehead, passing into gray or brownish gray on hindneck; wing-coverts brownish gray or grayish brown barred with black; feathers of red malar stripe in adult male without any black bar. (*Colaptes cafer*.)
- c. Smaller (wing averaging 157.4 in male, 156 in female; culmen averaging 35.1 in male, 34 in female). (Coloration dark, like *C. c. saturator* and *C. c. rufipileus*). (Central and southern Mexico.).....*Colaptes cafer cafer* (p. 29).
- cc. Larger (wing averaging more than 160, or else culmen averaging more than 38 in male, more than 36 in female).
- d. Wing longer (averaging more than 160); pileum less rufescent; black terminal band on under surface of tail narrower.
- c. Upper parts paler and grayer; smaller (wing averaging 165.8 in male, 163.2 in female; culmen averaging 37.9 in male, 36.9 in female). (Western United States, except northwest coast district; interior of British Columbia; northern Mexico.).....*Colaptes cafer collaris* (p. 33).
- cc. Upper parts darker and browner; larger (wing averaging 169.9 in male, 167.1 in female; culmen averaging 39.8 in male, 37.7 in female). (Northwest coast district, from northern California to southern Alaska.)  
*Colaptes cafer saturator* (p. 36).
- dd. Wing shorter (averaging 150 in male, 152.5 in female); pileum more rufescent, becoming deep cinnamon-rufous on forehead, etc.; black terminal band on under surface of tail broader. (Guadalupe Island, Lower California.).....*Colaptes cafer rufipileus* (p. 37).
- bb. Pileum and hindneck uniform deep cinnamon-rufous or rufous-chestnut; wing-coverts black barred with pale brown; feathers of red malar stripe in adult male with a black bar on middle portion. (State of Chiapas, southern Mexico, and Guatemala.).....*Colaptes mexicanoides* (p. 37).

### COLAPTES AURATUS AURATUS (Linnæus).

#### FLICKER.

*Adult male*.—Pileum and hindneck plain gray (nearly no. 6), interrupted by a nuchal crescentic band of bright scarlet, the forehead usually more brownish; back, scapulars, wing-coverts, and secondaries grayish brown (drab to olive-drab),<sup>a</sup> sharply barred with black, the black bars much narrower than the brown interspaces (except, sometimes, on secondaries) and pointed at the extremities, except on secondaries, where much broader than elsewhere; primaries dull black, more or less spotted, at least on middle portion, with light grayish brown or dull pale yellowish (these spots usually rather indistinct), their shafts bright clear cadmium yellow; rump white, mostly immaculate but laterally broken by broad brace-shaped or reniform bars of black; upper tail-coverts white, very variously marked (usually more or less transversely)<sup>b</sup> with black; tail black, the middle pair of rectrices duller or more olivaceous basally, usually edged, narrowly, with dull whitish, the inner web often notched or spotted along edge with the same; shafts of rectrices

<sup>a</sup> The color deeper, and usually more olivaceous, in winter, lighter and more grayish in summer.

<sup>b</sup> See Chapman, Bull. Am. Mus. Nat. Hist., iii, 1891, 311-314.



(except middle pair) bright pure cadmium yellow, with distal portion black; loreal and superciliary regions deep vinaceous-cinnamon, the suborbital and auricular regions, together with chin, throat, foreneck, and upper chest, uniform grayish vinaceous-cinnamon or dull vinaceous; malar region black, forming a conspicuous elongated patch or "mustache;" lower chest black, forming a conspicuous sub-crescentic patch; rest of under parts pale vinaceous-cinnamon or dull buff-pinkish laterally fading into white or pale yellowish medially and on under tail-coverts, conspicuously spotted with black, the spots mostly roundish or subcordate, larger and subtriangular, sometimes V-shaped, on under tail-coverts; under wing-coverts pale cadmium or buff yellow, paler along edge of wing, where more or less spotted with black; inner webs of remiges olivaceous (changing to deep yellow in certain lights), the basal portion of outer primaries and greater part of other remiges broadly edged with buff-yellow, the distal portion broadly barred or transversely spotted with the same; under surface of tail saffron yellow or dull cadmium yellow, broadly and abruptly tipped with black, the lateral pair of rectrices with a terminal spot or edging of whitish, the outer web usually narrowly edged or notched with the same, or with blackish alternating with whitish; bill black in summer, more brownish or dusky horn color (especially on basal half of mandible) in winter; iris dark reddish brown or brownish red; legs and feet grayish or horn color in dried skins, bluish gray or gray in life; length (skins), 244-290 (282.4); wing, 144-154 (149.9); tail, 92-115 (100.7); culmen, 32-36 (34.1); tarsus, 26-29 (27.5); outer anterior toe, 20-22.5 (21.3).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without the black malar patch or "mustache," this replaced by the color of throat, etc. (sometimes tinged with dull grayish); length (skins), 248-280 (260); wing, 137-155 (150.5); tail, 88.5-104.5 (99.3); culmen, 28-36 (32.7); tarsus, 25.5-28.5 (26.9); outer anterior toe, 20-23.5 (21.5).<sup>a</sup>

<sup>a</sup> Twenty-two specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males ( <i>C. a. auratus</i> ) from Florida.....	147.5	98.1	34.5	27.2	21.1
Two adult males ( <i>C. a. auratus</i> ) from Georgia.....	150.2	103.3	35.5	28.5	21.3
One adult male ( <i>C. a. auratus</i> ) from southern South Carolina...	149	103.5	32	26	20.5
One adult male ( <i>C. a. auratus</i> ) from Mississippi (September)...	150.5	-----	32.5	28.5	22
One adult male ( <i>C. a. auratus</i> ) from Louisiana (January).....	154	106.5	35	27.5	22
One adult male ( <i>C. a. auratus</i> ) from western Tennessee.....	151	115	36	27.5	21.5
Two adult males ( <i>C. a. auratus</i> ) from southwestern Indiana....	150.2	96.5	31.7	28.2	22.2
Two adult males ( <i>C. a. auratus</i> ) from southeastern Missouri....	149.5	98	32.5	27.5	20.5
Seven adult males ( <i>C. a. luteus</i> ) from northern South Carolina (Kershaw Co.).....	154.6	103.8	35	27.6	21.9

*Young male*.—Similar to the adult male, but vinaceous portions of head and neck more or less tinged with gray (especially on foreneck), malar patch usually duller black, pileum (forehead, at least) usually

Foot note—Continued.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES—continued.					
One adult male ( <i>C. a. luteus</i> ) from northern Alabama.....	158.5	109.5	36	28	21
Three adult males ( <i>C. a. luteus</i> ) from eastern Tennessee.....	159.3	106.8	36	27.7	21.8
One adult male ( <i>C. a. luteus</i> ) from Louisiana (January).....	154	106.5	35	27.5	22
One adult male ( <i>C. a. luteus</i> ) from northwestern Texas (Lipscomb Co., June) .....	156	.....	31	27	22
Three adult males ( <i>C. a. luteus</i> ) from eastern Kansas (May)....	155.3	106.5	32.2	27.8	21.5
One adult male ( <i>C. a. luteus</i> ) from eastern Nebraska (May)....	155	105.5	33.5	29	22
One adult male ( <i>C. a. luteus</i> ) from southwestern Indiana (October).....	156	101.5	32.5	28	22
Five adult males ( <i>C. a. luteus</i> ) from northern Indiana (1), northern Illinois (3), and Wisconsin (1).....	158.8	109.3	34.2	28.6	20.9
Six adult males ( <i>C. a. luteus</i> ) from Maryland (4) and Pennsylvania (2).....	156.9	108.2	34.6	27.9	21.8
Seven adult males ( <i>C. a. luteus</i> ) from New York (1), Rhode Island (1), Massachusetts (3), New Hampshire (1), and Vermont (1).....	154.9	104.9	34.7	28.3	21.5
Two adult males ( <i>C. a. borealis</i> ) from Ontario.....	160	104.3	36.5	28.3	22.3
Five adult males ( <i>C. a. borealis</i> ) from Minnesota (April).....	161.4	105.7	36.1	28.8	21.8
Ten adult males ( <i>C. a. borealis</i> ) from Athabasca (3), Mackenzie (4), Yukon (1), northern British Columbia (1), and Alberta (1)	163.5	108.7	36	28.9	22.3
Ten adult males ( <i>C. a. borealis</i> ) from Alaska.....	163.8	106.6	36.9	29.3	23
FEMALES.					
Ten adult females ( <i>C. a. auratus</i> ) from Florida.....	144.7	97.6	33	26.5	20.9
One adult female ( <i>C. a. auratus</i> ) from Georgia.....	151	98	36	28.5	22
One adult female ( <i>C. a. auratus</i> ) from southern South Carolina.	152	103	34	26	21
One adult female ( <i>C. a. auratus</i> ) from coast North Carolina....	148	102.5	29	28	20.5
One adult female ( <i>C. a. auratus</i> ) from Mississippi (May 27).....	150	101	28	26	21.5
One adult female ( <i>C. a. auratus</i> ) from Louisiana (April 27).....	152	100	32.5	28.5	22
Two adult females ( <i>C. a. auratus</i> ) from southern Texas.....	150.7	100.5	34	26.5	20.2
One adult female ( <i>C. a. auratus</i> ) from Arkansas.....	151	99.5	30.5	27.5	20.5
One adult female ( <i>C. a. auratus</i> ) from southwestern Indiana....	149.5	95.5	33.5	28	21
Three adult females ( <i>C. a. auratus?</i> ) from southeastern Illinois.	152.5	100.3	32	27.7	21.8
Two adult females ( <i>C. a. luteus</i> ) from eastern Kansas.....	153.7	105.2	31.5	27.2	21.5
Seven adult females ( <i>C. a. luteus</i> ) from northern South Carolina (Kershaw Co.).....	154.6	103.8	35	27.6	21.9
Six adult females ( <i>C. a. luteus</i> ) from New Jersey (1), Pennsylvania (1), Maryland (1), and District of Columbia (3).....	154.6	102	33	27.8	21.7
Nine adult females ( <i>C. a. luteus</i> ) from Massachusetts.....	155.6	105.2	34.8	28.1	21.6
One adult female ( <i>C. a. luteus</i> ) from New Hampshire.....	154	97	33.5	28	22
Two adult females ( <i>C. a. luteus</i> ) from New York.....	155	105.5	32.5	27	20.7
Six adult females ( <i>C. a. borealis</i> ) from Minnesota (2), North Dakota (2), and South Dakota (2).....	159.4	105.3	35.1	28.5	21.8
Nine adult females ( <i>C. a. borealis</i> ) from Athabasca (1), Mackenzie (6), and Yukon Terr. (2).....	164	105.9	35.8	29.1	22.2
Three adult females ( <i>C. a. borealis</i> ) from Alaska.....	163	104.8	36.2	28.8	22.5

more or less suffused with red, and black spots on under parts averaging larger.

*Young female*.—Similar to the young male, but black malar patch wanting or much less distinct.

Austroriparian faunal area of United States, from Florida and the Gulf coast north to coast district of North Carolina (probably to southeastern Virginia), southwestern Indiana and southeastern Illinois (lower Wabash Valley), and southeastern Missouri.

[*Cuculus*] *auratus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 112 (Carolina; founded on *Picus major, alis aureis* Catesby, Car., i, p. 18, t. 18).

[*Picus*] *auratus* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 174.—GMELIN, Syst. Nat., i, pt. 1, 1788, 430.—LATHAM, Index Orn., i, 1790, 242.

*Picus auratus* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxvi, 1818, 70 ("Brazil"), 100, part; Ois. Am. Sept., ii, 1807, 66, pl. 123, part.—TEMMINCK, Cat. Syst., 1807, 64.—LESSON, Traité d'Orn., 1831, 228.—WILSON, Am. Orn., i, 1810, 45, pl. 3, fig. 1, part.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 44, part.—AUDUBON, Orn. Biog., i, 1832, 191, part, pl. 37; v, 1839, 540, part; Synopsis, 1839, 184, part; Birds Am., oct. ed., iv, 1842, 282, part, pl. 273.—NUTTALL, Man. Orn. U. S. and Can., i, 1832, 561, part.—SUNDEVALL, Consp. Pic., 1866, 71, part.

*P[icus] auratus* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 368 parts; Obs. Wils. Am. Orn., 1826, [29], part.

*Colaptes auratus* SWAINSON, Fauna Bor.-Am., ii, 1831, pp. xxvi, 314, part; Classif. Birds, 1837, 310, part.—BONAPARTE, Geog. and Comp. List, 1838, 40, part.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 663, part.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 118, part; Cat. N. Am. Birds, 1859, no. 97, part.—DRESSER, Ibis, 1865, 470 (San Antonio, Texas, 1 spec., June).—COUES, Check List, 1873, no. 312, part; 2d ed., 1882, no. 457, part; Birds North-West, 1874, 292, part (in synonymy).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 575, part, pl. 55, figs. 1, 2.—MERRIAM, Am. Nat., viii, 1874, 88 (St. Johns R., etc., Florida; crit.).—(?)REID, Bull. U. S. Nat. Mus., no. 25, 1884, 213 (Bermuda, rare straggler).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 190, part; Nom. N. Am. Birds, 1881, no. 378, part; Bull. Nutt. Orn. Club, vi, 1881, 121 (Mt. Carmel, Illinois; crit.); Orn. Illinois, i, 1889, 387, part.—INGERSOLL, Bull. Nutt. Orn. Club, vi, 1881, 184, part (vernacular synonymy).—NEHRING, Bull. Nutt. Orn. Club, vii, 1882, 171 (s. e. Texas, breeding, but chiefly in winter).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 412, part; Auk, xvi, 1899, 111.—(?)HASBROUCK, Auk, vi, 1889, 239 (Eastland Co., Texas, common).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1891, 311–313, part (variation of color-pattern upper tail-coverts), 323 (Corpus Christi, Texas, 1 spec., March 26).—(?)HARGITT, Cat. Birds Brit. Mus., xvii, 1890, 12, part.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 129, part.—(?)CARROLL, Auk, xvii, 1900, 344 (Refugio Co., Texas, 1 spec., March).—BURNS, Wilson Bull., no. 31, 1900, 1–82, part (monogr.).—STOCKARD, Auk, xxi, 1904, 467, 468 (Mississippi; breeding habits).—FISHER (G. C.), Wilson Bull., no. 71, 1910, 127 (a Florida vernacular name).—HOWELL, Auk, xxvii, 1910, 383 (St. Francis River and Cushion Lake, s. e. Missouri).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 52, part, pl. 6 (food).



- [*Colaptes*] *auratus* BONAPARTE, Consp. Av., i, 1850, 113, part.—GRAY, Hand-list, ii, 1870, 202, no. 8822, part.—COUES, Key N. Am. Birds, 1872, 197, part.—SHARPE, Hand-list, ii, 1900, 201.
- C[olaptes] auratus* COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 378, part (Illinois); Man. N. Am. Birds, 1887, 295, part.
- [*Colaptes auratus*] var. *auratus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 575, part.
- Colaptes auratus auratus* OBERHOLSER, Notes on Mam. and Sum. Birds W. N. Car., 1905, 14 (s. portion up to 4,000 ft.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 194.
- Geopicos auratus* MALHERBE, Mém. Acad. Metz, xxx, 1849, 359, part.
- Geopicus auratus* MALHERBE, Mon. Piced., ii, 1862, 255, part; iv, pl. 109, figs. 5, 6, 7.
- (?) *Colaptes auratus luteus* (not of Bangs?) FERRY, Auk, xxiv, 1907, 284 (Cairo, Illinois, Feb.), 433 (Cairo, Aug.).—WOODRUFF, Auk, xxv, 1908, 200 (Shannon Co., Missouri, March).

### COLAPTES AURATUS LUTEUS Bangs.

#### NORTHERN FLICKER.

Similar in coloration to *C. a. auratus*,<sup>a</sup> but larger.

*Adult male*.—Length (skins), 250–293 (265); wing, 154–165 (156.3); tail, 96.5–112 (105.9); culmen, 31–40 (34.6); tarsus, 26.5–31 (28.1); outer anterior toe, 20–23 (21.4).<sup>b</sup>

*Adult female*.—Length (skins), 248–292 (259); wing, 149.5–159.5 (155); tail, 97–115 (103.9); culmen, 31–38.5 (33.8); tarsus, 26.5–29.5 (27.8); outer anterior toe, 20–23.5 (21.7).<sup>c</sup>

Northern and central United States, east of Rocky Mountains, except North Dakota, Minnesota, etc.; south to Virginia, western North Carolina, northern South Carolina (at least in winter), northern Alabama, eastern Tennessee and Kentucky, southern Indiana and Illinois (except extreme southern portions), Missouri (except southeastern part), Kansas, etc.; in winter to Gulf coast and southern Texas.

*Picus auratus* (not *Cuculus auratus* Linnaeus) VIEILLIOT, Ois. Am. Sept., ii, 1807, 66, part, pl. 123; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 100.—LESSON, Traité d'Orn., 1831, 228, part.—WILSON, Am. Orn., i, 1810, 45, part, pl. 3, fig. 1.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 44, part.—AUDUBON, Orn. Biog., i, 1832, 191, part, pl. 37; v, 1839, 540, part; Synopsis, 1839, 184, part; Birds Am., oct. ed., iv, 1842, 282, part, pl. 273.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 561, part.—SUNDEVALL, Consp. Pic., 1866, 71, part.

*P[icus] auratus* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 368, part; Obs. Wils. Am. Orn., 1826, [29], part.

<sup>a</sup> After very careful comparison of a large series of specimens I am not able to verify a single one of the alleged color-differences mentioned by Mr. Bangs; indeed, even specimens from northwestern Alaska (*C. a. borealis*) are quite as dark as Florida examples, and, so far as I can see, in every respect identical in coloration with them.

<sup>b</sup> Thirty-three specimens.

<sup>c</sup> Thirty specimens.



- Colaptes auratus* SWAINSON, Fauna Bor.-Am., ii, 1831, pp. xxvi, 314, part; Classif. Birds, ii, 1837, 310.—BONAPARTE, Geog. and Comp. List, 1838, 40, part.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 663. BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 118, part; Cat. N. Am. Birds, 1859, no. 97, part.—MARSH, Zoologist, 1859, 6327 (accidental in England).—SCLATER, Cat. Am. Birds, 1862, 344, part (Eastern North America).—(?)DRESSER, Ibis, 1865, 470 (San Antonio, Texas, 1 spec.).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 291 (vicinity of New York City).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 143 (Saline R., n. w. Kansas, winter).—COUES, Check List, 1873, no. 312, part; 2d ed., 1882, no. 457, part; Birds North-West, 1874, 292, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 575, part, pl. 55, figs. 1, 2.—BREWSTER, Ann. Lyc. N. Y., xi, 1875, 144 (Ritchie Co., West Virginia); Bull. Nutt. Orn. Club, iii, 1878, 181 (descr. first plumage), Auk, x, 1893, 231–236 (feeding of young).—SCOTT, Bull. Nutt. Orn. Club, v, 1880, 56 (nesting in natural cavity).—(?)DALGLEISH, Bull. Nutt. Orn. Club, v, 1880, 74 (accidental in England).—HARDY, Bull. Nutt. Orn. Club, v, 1880, 241 (unusual nesting sites).—RIDGWAY, Nom. N. Am. Birds, 1881, no. 378, part.—OGILVY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 59 (Navarro Co., Texas, winter; habits).—BICKNELL, Auk, ii, 1885, 259 (notes).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 412, part.—LLOYD, Auk, iv, 1887, 191 (Tom Green and Concho counties, Texas, winter).—PHILLIPS, Auk, iv, 1887, 346 (laid 71 eggs in 73 days!).—COOKE, Bird Migr. Miss. Val., 1888, 133, part (San Angelo, s. w. Texas; Bonham, Texas; etc.).—BECKHAM, Proc. U. S. Nat. Mus., x, 1888, 665 (San Antonio, Texas, 1 spec., March 2).—ATTWATER, Auk, ix, 1892, 235 (San Antonio, Texas, winter).—SINGLEY, Rep. Geol. Surv. Texas, 1894, 350 (Lee Co., Texas, winter resident).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 129, part.—MILLER (G. S.), Auk, xiv, 1897, 275 (spec. with spotted rump).—BURNS, Wilson Bull., no. 31, 1900, 1–82, part (monogr.); no. 70, 1910, 55 (a Pennsylvania vernacular name).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 52, part (food).
- [*Colaptes*] *auratus* BONAPARTE, Consp. Av., i, 1850, 113, part; Ateneo Italiano, ii, 1854, 126.—GRAY, Hand-list, ii, 1870, 202, no. 8822, part.—COUES, Key N. Am. Birds, 1872, 197, part.
- [*Colaptes*] *auratus* REICHENBACH, Handb. Scans., Picinæ, 1854, 412, pl. 666, fig. 4419–20, part.—MAXIMILIAN, Journ. für Orn., 1858, 420 (New Harmony, Indiana, winter).—COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 378, part (Illinois); Man. N. Am. Birds, 1887, 295, part.
- [*Colaptes auratus*] var. *auratus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 575, part.
- Geopicos auratus* MALHERBE, Mém. Acad. Metz, xxx, 1849, 359, part.
- Geopicus auratus* MALHERBE, Mon. Picid., ii, 1862, 255, part; iv, pl. 109, figs. 5, 6, 7.
- Colaptes auratus luteus* BANGS, Auk, xv, April, 1898, 177 (Watertown, Massachusetts; coll. E. A. and O. Bangs).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xvi, 1899, 111, part (check list no. 412a).—BLAKE, Auk, xix, 1902, 199 (Berkshire Co., Massachusetts, Dec., 1 spec.).—LARSEN, Wilson Bull., no. 60, 1907, 114 (Lyman Co., South Dakota, com. sum. res.).—HOWELL, Proc. Biol. Soc. Wash., xxi, 1908, 121 (n. Louisiana, winter); Auk, xxvii, 1910, 296 (Midway, Barbourville, etc., Kentucky), 302 (High Cliff, etc., e. Tennessee).—EMBODY, Auk, xxvii, 1910, 172 (Hanover Co., Virginia, resident).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 194, part.
- [*Colaptes auratus luteus*] SHERMAN (Althea R.), Wilson Bull., xxii, 1910, 135–171, figs., 5 pls. (nesting habits, etc.).
- [*Colaptes*] *luteus* SHARPE, Hand-list, ii, 1900, 201, part.

## COLAPTES AURATUS BOREALIS Ridgway.

## BOREAL FLICKER.

Similar to *C. a. auratus* and *C. a. luteus* in coloration, but larger than the latter, much larger than the former.<sup>a</sup>

*Adult male*.—Length (skins), 270–314 (292); wing, 156–170 (162.9); tail, 102.5–115 (107); culmen, 34.5–40 (36.4); tarsus, 27–31.5 (29); outer anterior toe, 21–24.5 (22.5).<sup>b</sup>

*Adult female*.—Length (skins), 270–310 (287); wing, 156–171 (162.3); tail, 99–115 (105.5); culmen, 32.5–38.5 (35.6); tarsus, 27.5–30.5 (28.8); outer anterior toe, 21–23.5 (22.2).<sup>c</sup>

Northern North America, east of Rocky Mountains, from Labrador, Quebec, northern Ontario, Minnesota, North Dakota, eastern Montana, eastern Wyoming, etc., north to the limit of tree growth (northern Ungava, Mackenzie, etc.), northwestward through Alaska to the shores of Bering Sea and to valley of the Kowak River; accidental on Pribilof Islands and in Greenland; occasional in winter along or near Pacific coast through British Columbia (including Vancouver Island) to California, and along Rocky Mountains to Colorado.

[*Picus*] *auratus* (not of Linnæus) FORSTER, Philos. Trans., lxii, 1772, 383, 387 (Albany Fort).

*Colaptes auratus* REINHARDT, Ibis, 1861, 8 (accidental in Greenland).—BLAKISTON, Ibis, 1862, 3 (Hudson Bay).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 275 (near Ft. Yukon and Nulato, Alaska).—ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 63 (Ft. Rice, North Dakota, and west of Musselshell R.).—COUES, Check List, 1873, no. 312, part; 2d ed., 1882, no. 457, part; Birds Northwest, 1874, 292, part; Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 617 (Pembina, Mouse R., Turtle Mt., etc., North Dakota; crit.).—NEWTON, Man. Nat. Hist. Greenland, 1875, 97 (Greenland, 1 spec., 1852).—GRINNELL (G. B.), in Ludlow's Rep. Recon., 1876, 81 (Missouri R. as far as Ft. Buford).—MCCHESNEY, Bull. U. S. Geol. and Geog. Surv. Terr., v, 1879, 82 (Ft. Sisseton, North Dakota, resident).—RIDGWAY, Nom. N. Am. Birds, 1881, no. 378, part.—NELSON, Cruise 'Corwin,' 1881 (1883), 74 (head of Norton Sound, Kotzebue Sound, and Bering Strait, Alaska); Rep. Nat. Hist. Coll. Alaska, 1887, 160 (Sitka, etc., Alaska; lower Anderson R., Mackenzie).—MCLENEGAN, Cruise 'Corwin,' 1884, 117 (upper Kowak R., Alaska).—STEARNS, Proc. U. S. Nat. Mus., vi, 1884, 118 (L'Anse Claire, Labrador).—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 242 (near Apotok I., Hudson Strait; Northwest R., Ungava); Contr. Nat. Hist. Alaska, 1886, 166 (Ft. Yukon).—(?)BALL, Auk, ii, 1885, 383 (San Bernardino Co., California, 3 specs.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 412, part.—(?)COOPER, Auk, iv, 1887, 91 (West Grove, Ventura Co., California, 1 spec., Nov.).—(?)THORNE, Auk, iv, 1887, 364 (Colorado).—(?)COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 85 (Ft. Lyons, Loveland, and South Platte, Colorado, autumn and winter); no. 44, 1898, 162 (Arkansas Valley, e. Colorado).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 551 (Manitoba, resident; habits).—PALMER (W.), Proc. U. S. Nat. Mus., xiii, 1890, 262 (St. Johns, Newfoundland).—CLARKE (W. E.), Auk, vii, 1890, 322 (Ft. Churchill, Hudson Bay).—HARGITT, Cat. Birds

<sup>a</sup> See remarks on p. 15, footnote.

<sup>b</sup> Twenty-seven specimens.

<sup>c</sup> Eighteen specimens.

Brit. Mus., xviii, 1890, 12, part (Ft. York, Hudson Bay; Ft. Dufferin).—MACFARLANE, Proc. U. S. Nat. Mus., xiv, 1891, 438 (Valley of Anderson R., Mackenzie).—FANNIN, Check List Birds Brit. Col., 1891, 29 (Vancouver I. and mainland, rare).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1893, 43 (Victoria, Brit. Columbia; 2 specs.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 129, part.—(?)GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 26 (Alhambra, Los Angeles Co., California, 1 spec., Feb. 7).—COUBEUX, Ottawa Nat., 1900, 28 (s. Saskatchewan, summer res.).—BURNS, Wilson Bull., no. 31, 1900, 1-82, part (monogr.).—PORTER, Auk, xvii, 1900, 72 (Newfoundland).—(?)FELGER, Auk, xxii, 1905, 421 (Hall Valley, Park Co., Colorado, 1 spec., Oct. 24).—CAMERON, Auk, xxiv, 1907, 270 (Custer and Davenport counties, Montana).

[*Colaptes*] *auratus* COUES, Key N. Am. Birds, 1872, 197, part.

*Colaptes* *auratus* COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.—RIDGWAY, Man. N. Am. Birds, 1887, 295, part.

*Colaptes auratus luteus* (not of Bangs) AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xvi, 1899, 111, part.—BISHOP, North Am. Fauna, no. 19, 1900, 78 (Yukon Valley, Glacier, etc., Alaska; crit.).—FLEMING, Auk, xviii, 1901, 39 (Parry Sound and Muskoka, n. Ontario).—CARY, Auk, xviii, 1901, 234 (Black Hills, Wyoming, breeding).—PREBLE, North Am. Fauna, no. 22, 1902, 112 (between Lake Winnipeg and Hudson Bay; Albany Fort, Ft. Churchill, etc.); no. 27, 1908, 386 (north to limit of trees, west to base of Rocky Mts.).—(?)GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 39 (California range).—LARSEN, Wilson Bull., no. 60, 1907, 114 (Lyman Co., South Dakota, summer res.).—TOWNSEND and ALLEN, Proc. Bost. Soc. N. H., xxxiii, 1907, 377 (s. Labrador to Hudson Strait).—BENT, Auk, xxv, 1908, 26 (s. w. Saskatchewan, common).—SETON, Auk, xxv, 1908, 71 (north to 20 m. n. e. of Pt. Reliance, abundant).—DAWSON, Auk, xxv, 1908, 484 (Orcas I., Washington, 1 spec., Oct. 15).—KERMODE, Prov. Mus. Brit. Col., 1909, 50 (Vancouver I., etc.).—VISHER, Auk, xxvi, 1909, 148 (w. South Dakota, common); xxviii, 1911, 12 (Harding Co., w. South Dakota, mostly east of Little Missouri R., breeding).—TOWNSEND (C. W.), Auk, xxvi, 1909, 201 (Sandwich Bay, Washington, Aug., 1908).—(?)COOKE, Auk, xxvi, 1909, 413 (Yuma and Park counties, Colorado, 8,000 ft., 2 specs., Oct.).—OSGOOD, North Am. Fauna, no. 30, 1909, 39 (Yukon R., between Circle and Eagle, and Seward Creek, Alaska), 89 (upper Russell Creek, Yukon Terr.).—TOWSEND and BENT, Auk, xxvii, 1910, 14 (Mingan and near Isles des Corneilles, Labrador).—FERRY, Auk, xxvii, 1910, 199 (Saskatchewan, common).—CLARK (A. H.), Proc. U. S. Nat. Mus., xxxviii, 1910, 60 (St. George I., Pribilofis, 1 spec., Oct., 1904).—SAUNDERS, Auk, xxviii, 1911, 38 (Gallatin Co., Montana).—RATHBUN (S. F.), Auk, xxviii, 1911, 486 (Orcas I., San Juan Co., Washington, Oct. 15, 1907).—(?)ARNOLD, Auk, xxix, 1912, 76 (Newfoundland, breeding).

[*Colaptes*] *luteus* SHARPE, Hand-list, ii, 1900, 201, part.

*Colaptes auratus borealis* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 31 (Nulato, lower Yukon R., Alaska; coll. U. S. Nat. Mus.).

## COLAPTES AURATUS LUTEUS X CAFER COLLARIS.

### HYBRID FLICKER.

Intermediate in coloration and size between *C. auratus luteus* or *C. a. borealis* and *C. cafer collaris*, the characters of the two being mixed or blended, in various degrees in different specimens, the more frequent combinations being as follows:—

(a) Shafts, etc., orange or orange-yellow, intermediate in hue between the yellow of *auratus* and the orange-red of *cafer*.



(b) With pure yellow shafts, etc., of *auratus* combined with red malar stripe of *cafer*.

(c) Similar to *C. cafer collaris*, but having either the red nuchal mark or vinaceous throat, or both, of *C. auratus*.

(d) Similar to *C. cafer collaris*, but having black feathers in the red malar stripe.

(e) Similar to *C. auratus luteus* or *C. a. borealis*, but having more or less red in the black malar stripe.

(f) Similar to *C. auratus luteus* or *C. a. borealis*, but with red or orange colored feathers mixed with the yellow ones in wing and tail.

(g) Similar to *C. cafer collaris*, but with yellow feathers mixed with the red ones in wing and tail.

Besides the above styles, every possible combination or mixture of the color characters of the two species is represented in other individuals.

As a rule, these hybrid specimens have a paler coloration than those of either of the parent forms.<sup>a</sup>

Western portion of the Great Plains, from southwestern Saskatchewan to western Texas, or the area of overlapping of the respective ranges of *C. auratus borealis* or *C. a. luteus* and *C. cafer collaris*; casual, or of irregular occurrence, in British Columbia, Oregon (Camp Harney), California<sup>b</sup> (San Francisco; Stockton; Cosumnes River; Calaveras County; Marysville; etc.), Nevada (Washoe Valley; West Humboldt Mountains), Arizona (Fort Whipple), eastern Kansas (Topeka; Lawrence), Illinois (Warsaw; Mount Carmel); New York (Orange County; Fort Hamilton), Louisiana (Plaquemine Parish), etc.

*Picus ayresii* AUDUBON, Birds Am., oct. ed., vii, 1844, 348, pl. 494 (near Ft. Union, upper Missouri R.; type now in coll. U. S. Nat. Mus.).

*Colaptes ayresi* BONAPARTE, Consp. Av., i, 1850, 113.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 22 (Brit. Columbia; Stockton and San Francisco, California; Pueblo, Colorado).

[*Colaptes*] *ayresi* BONAPARTE, Ateneo Italiano, ii, 1854, 126.—SHARPE, Handlist, ii, 1900, 201.

*Picus ayresi* DE KAY, Nat. Hist. N. Y., ii, 1844, 194.

*C[olaptes] ayresii* REICHENBACH, Handb. Scans.-Picinæ, 1854, 413, pl. 666, fig. 4421.

*Colaptes ayresii* BAIRD, Rep. Stansbury's Surv. Gt. Salt Lake, 1852, 333 (Ft. Union).—HEERMANN, Journ. Ac. Nat. Sci. Phila., ii, 1852, 270 (mts. near Cosumnes R., California, 2 specs.).—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 120.

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<sup>a</sup> For special discussion of this hybrid series see the following: Baird, Rep. Pacific R. R. Surv., ix, 1858, 122-124.—Coues, Birds of the North-West, 1874, 293, 294.—Ridgway and Belding, Proc. U. S. Nat. Mus., i, 1879, 430-432.—Allen, Bull. Am. Mus. N. H., i, 1892, 21-44.—Rhoads, Science, xx, 1892, 325-327.

<sup>b</sup> Some California specimens are doubtless hybrids of *C. auratus borealis* and *C. cafer saturation*, whose respective ranges adjoin in northern British Columbia and southern Alaska.



*Geopicus ayresii* MALHERBE, Mon. Pucid., ii, 1862, 260.

*Colaptes hybridus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 122 (valleys of upper Missouri and Yellowstone rivers); Cat. N. Am. Birds, 1859, no. 98a.—SNOW, Birds Kansas, 1873, 3 (Topeka and Lawrence, Kansas).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 582, pl. 54, fig. 3.—RIDGWAY, Field and Forest, 1877, 209 (Colorado); Orn. 40th Parallel, 1877, 556 (Washoe Valley, Nevada, 1 spec., Jan.); Orn. Illinois, i, 1889, 387.—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 130 (Camp Harney, Oregon, 1 spec.).

*Colaptes "hybridus"* COUES, Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 618 (upper Missouri, Milk R., and Yellowstone R.).

*Colaptes auratus*, var. *hybridus* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 38 (Nevada).

*Colaptes auratus*,  $\gamma$ . *hybridus* RIDGWAY, Bull. Nutt. Orn. Club, iii, Apr., 1878, 68 (Calaveras Co., California; crit.).—BELDING and RIDGWAY, Proc. U. S. Nat. Mus., i, 1879, 430 (Marysville, California, Jan., Feb.; crit.).

*Colaptes auratus hybridus* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 190; Nom. N. Am. Birds, 1881, no. 378a.—BROWN (N. C.), Bull. Nutt. Orn. Club, vii, 1882, 40 (Boerne, Kendall Co., w. Texas).

*Picus hybridus aurato-mexicanus* SUNDEVALL, Consp. Picinarium, 1866, 72.

*Colaptes auratus+mexicanus* COUES, Bull. Nutt. Orn. Club, vi, July, 1881, 183, in text (Ft. Whipple, Arizona, 1 spec., Feb. 20).

*Colaptes auratus+C. mexicanus* BERIER, Bull. Nutt. Orn. Club, vi, Oct., 1881, 247 (Orange Co. and Ft. Hamilton, New York; Mt. Carmel, Illinois).

*Colaptes auratus+cafer* BURNS, Wilson Bull., no. 18, 1898, 4 (Chester Co., Pennsylvania, 1 spec., Oct. 3, 1898).

(?) *Colaptes auratus?* RIDGWAY, Orn. 40th Parallel, 1877, 557 (West Humboldt Mts., Nevada, 1 spec., Oct.).

*Colaptes auratus* (not *Cuculus auratus* Linnæus) ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 139 (Ft. Hays, w. Kansas).—BERIER, Bull. Nutt. Orn. Club, v, 1880, 47 (Ft. Hamilton, New York, 1 spec., Oct. 4, 1879).

(?) *Colaptes chrysoides* RIDGWAY, Bull. Essex Inst., vii, 1875, 19, 38 (West Humboldt Mts., Nevada).—BEYER, ALLISON, and KOPMAN, Auk, xxv, 1908, 448 (Deer Range Plantation, Plaquemine Parish, Louisiana, 1 spec., Dec., 1863).

## COLAPTES CHRYSOCAULOSUS CHRYSOCAULOSUS Gundlach.

### CUBAN FLICKER.

Similar to *C. auratus*, but rump thickly spotted with black, gray of pileum lighter and clearer, and under parts more heavily spotted.

*Adult male*.—Pileum, together with lower and lateral portions of hindneck, uniform clear gray (about no. 6), interrupted by a large crescentic nuchal patch of bright poppy red; back, scapulars, wing-coverts, and secondaries grayish brown (olivaceous broccoli brown to nearly isabella color) sharply barred with black, the bars broader (but still narrower than the grayish brown interspaces) on secondaries; primary coverts and primaries black, the former narrowly edged terminally with dull whitish or pale yellowish, the inner (proximal) primaries more or less spotted or barred on middle portion of outer web with the same or pale grayish brown; shafts of remiges bright chrome or deep-chrome yellow; rump and upper tail-coverts white, the former thickly marked with mostly cordate spots of black, the

latter broadly barred or transversely spotted with black; tail black, the rectrices narrowly edged with dull whitish or with narrow bars of the same along edge, the outermost one with distinct bars for most of its length; shafts of rectrices bright chrome yellow basally; under side of tail saffron yellow, extensively tipped with black; loreal, orbital, and auricular regions, chin, throat, and foreneck, uniform grayish vinaceous or deep vinaceous-cinnamon; malar region deep black; a large semilunar or transversely ovoid patch of deep black on chest; rest of under parts pale maize or naples yellow medially, passing into pale buffy brown or pale cinnamon laterally, each feather with a large subterminal or roundish spot of black; under wing-coverts light buff-yellow, those along edge of wing much paler and irregularly barred with black; inner webs of remiges pale buff-yellow for basal half (more or less), olive-dusky distally, strongly glossed (except along edge) with light chrome yellow; bill dusky (in dried skins); legs and feet dusky grayish or horn color (in dried skins); length (skins), 257–290 (274); wing, 136.5–146.5 (142.3); tail, 96.5–111 (105.4); culmen, 32.5–36.5 (34); tarsus, 26.5–28 (27.1); outer anterior toe, 20.5–23.5 (22.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but black malar patch replaced by the general vinaceous-cinnamon color of throat, etc.; length (skins), 250–280 (268); wing, 133–145 (141.1); tail, 100–108 (104.2); culmen, 32.5–35.5 (33.3); tarsus, 25–28.5 (26.8); outer anterior toe, 21–23 (21.9).<sup>a</sup>

Island of Cuba (Guamá; El Guamá; Remédios; San Diego de los Baños; Trinidad).

*Colaptes auratus* (not *Cuculus auratus* Linnaeus) VIGORS, Zool. Journ., iii, 1828, 444 (Cuba).—D'ORBIGNY, in La Sagra's Hist. Fis. Pol. y Nat. Cuba, Aves, 1839, 110; French ed., p. 144.—DENNY, Proc. Zool. Soc. Lond., 1847, 39.—LEMBEYE, Aves de la Isla de Cuba, 1850, 131.—CABANIS, Journ. für Orn., 1856, 103 (habits).—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 307.—GUNDLACH, Journ. für Orn., 1861, 415 (crit.).

*P[icus] auratus* WAGLER, Isis, 1829, 516 (Cuba).

*Colaptes chrysocaulosus* GUNDLACH, Ann. Lyc. Nat. Hist. N. Y., vi, 1858, 273 (—, Cuba); Journ. für Orn., 1874, 153 (habits); Contr. Orn. Cubana, 1876, 274; Orn. Cubana, ed. 1895, 142.—ALBRECHT, Journ. für Orn., 1861, 210.—CORY, Auk, iii, 1886, 330 (synonymy; descr.); Birds West Ind., 1889, 175; Cat. West Ind. Birds, 1892, 12, 104, 128.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 15.—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 301 (near Trinidad, s. Cuba).

[*Colaptes*] *chrysocaulosus* GUNDLACH, Journ. für Orn., 1861, 334; Repert. Fisico-Nat. Cuba, i, 1866, 294.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 307.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101.—CORY, List Birds West Ind., 1885, 20.—SHARPE, Hand-list, ii, 1900, 201.

[*Colaptes*] *chrysocaulosus* RIDGWAY, Man. N. Am. Birds, 1887, 295.

[*Colaptes auratus*] var. *chrysocaulosus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 575.

*P[icus] chrysocaulosus* LAWRENCE, Ann. Lyc. N. Y., vi, 1858, 276 (crit.).

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<sup>a</sup> Ten specimens.

**COLAPTES CHRYSOCAULOSUS GUNDLACHI (Cory).****GRAND CAYMAN FLICKER.**

Similar to *C. c. chrysocaulosus*, but decidedly smaller and black malar patch of male averaging smaller and narrower.<sup>a</sup>

*Adult male*.—Length (skins), 225–235 (232); wing, 127–132.5; tail, 75–90.5 (85.2); culmen, 30–33 (31.3); tarsus, 23–25 (23.8); outer anterior toe, 20–20.5 (20.2).<sup>b</sup>

*Adult female*.—Length (skins), 240–260 (250); wing, 127–131 (129.5); tail, 86.5–91.5 (88.1); culmen, 29–32.5 (30.6); tarsus, 24–25 (24.5); outer anterior toe, 19.5–20.5 (20).<sup>c</sup>

Island of Grand Cayman, south of Cuba.

*Colaptes gundlachi* CORY, Auk, iii, Oct., 1886, 498, 502 (Grand Cayman, W. I.; coll. C. B. Cory); Birds West Ind., 1889, 175; Cat. West Ind. Birds, 1892, 12, 104, 129, 143.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 15.—NICOLL, Ibis, 1904, 584 (crit.).—LOWE, Ibis, 1909, 341; 1911, 150.

[*Colaptes*] *gundlachi* SHARPE, Hand-list, ii, 1900, 201.

**COLAPTES CHRYSOIDES CHRYSOIDES (Malherbe).****GILDED FLICKER.**

*Adult male*.—Pileum, together with loreal and superciliary regions, dull vinaceous-cinnamon or vinaceous-fawn color, passing into vinaceous-drab on hindneck; back, scapulars, wing-coverts, and secondaries deep écru-drab, rather narrowly barred with black (the black bars always less than half as wide as the drab interspaces) except on secondaries (where much broader); rump white, mostly immaculate, but laterally transversely spotted with black; upper tail-coverts white, broadly barred with black, sometimes with U- or V-shaped markings instead of bars, or with both; tail black, the basal half or more of inner web of middle pair of rectrices notched or barred along edge with pale brownish gray, the outer web of one or two middle pairs narrowly edged basally with dull whitish, the outermost (developed) pair with a terminal spot and (usually) several spots along edge of distal portion of outer web, of dull whitish or pale brownish, the shafts of all the rectrices (except middle pair, which are dull yellowish or brownish basally) bright yellow basally (sometimes for nearly basal half); primaries dull black with bright cadmium or chrome yellow shafts, the outer web usually with more or less distinct spots of pale yellowish drab or dull yellowish on proximal or middle portion (or both), at least on proximal quills; rictal, suborbital, and auricular regions, sides of neck, chin, throat, and foreneck uniform gray (nearest no. 7, or between this and smoke gray), passing posteriorly

<sup>a</sup> The alleged color-characters mentioned in the original description are not apparent in the series examined by me.

<sup>b</sup> Five specimens.

<sup>c</sup> Four specimens.



(more or less distinctly) into much paler and more pinkish gray or vinaceous-whitish along anterior margin of the large black, broadly remiform, jugular patch; malar region (except anterior point) bright vermilion red, the feathers grayish basally; rest of under parts vinaceous-white, the vinaceous tinge more obvious laterally, thickly spotted with black, the spots mostly circular or subcordate, more transverse on flanks and under tail-coverts; under wing-coverts pale buffy yellow or pale straw yellow, still paler (yellowish white) along edge of wing, where narrowly barred with blackish; inner webs of remiges dusky olive (changing or passing into dull golden yellowish toward shaft) on distal portion (extensively on outer primaries), broadly edged proximally with light creamy yellow (nearest maize yellow), the distal portion of secondaries with broad spots or large roundish indentations of the same; under surface of tail, abruptly, dull yellow (nearly wax yellow) for basal half (approximately), the shafts of same portion clear bright yellow; bill dull black or brownish black; feet grayish or olive-grayish (in dried skins); length (skins), 246-285 (264); wing, 138.5-148.5 (143.9); tail, 87-98.5 (93.3); culmen, 33-37 (34.9); tarsus, 26-27.5 (26.5); outer anterior toe, 19.5-23 (21).<sup>a</sup>

*Adult female*.—Similar to the adult male, but red malar stripe replaced by gray (like throat, etc.); length (skins), 243-270 (253); wing, 139.5-146 (141.6); tail, 85-91.5 (88.7); culmen, 31-36 (34.1); tarsus, 25.5-29 (26.8); outer anterior toe, 19-20.5 (19.9).<sup>b</sup>

<sup>a</sup> Ten specimens.<sup>b</sup> Eight specimens

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males ( <i>C. c. chrysoides</i> ) from Cape San Lucas district.	143.9	93.3	34.9	26.5	21
Five adult males ( <i>C. c. brunnescens</i> ) from northern Lower California.....	142.3	89.8	35.4	26.7	21.1
Three adult males ( <i>C. c. mearnsi</i> ) from Guaymas, southwestern Sonora.....	146.3	96.8	35.7	27.7	21.3
One adult male ( <i>C. c. mearnsi</i> ) from Camoa, southeastern Sonora.....					
Ten adult males ( <i>C. c. mearnsi</i> ) from northern Sonora (5) and Arizona (5).....	148.2	93.8	37.8	27.7	22.5
FEMALES.					
Seven adult females ( <i>C. c. chrysoides</i> ) from Cape San Lucas district.....	145	90.8	33.2	26.8	20.6
Seven adult females ( <i>C. c. brunnescens</i> ) from northern Lower California.....	141.4	88.6	34.5	27	19.9
One adult female ( <i>C. c. mearnsi</i> ) from Guaymas, southwestern Sonora.....	141	96.5	34.5	27	22
Ten adult females ( <i>C. c. mearnsi</i> ) from northern Sonora (5) and Arizona (5).....	146.9	92.6	36.6	27	20.7



*Young male*.—Similar to the adult male, but forehead usually tinged with red, red malar stripe less intense (often less uniform, more or less barred), feathers of occiput and hindneck (sometimes of crown also) indistinctly tipped with paler, gray of throat, etc., paler and (usually) less bluish, black spots on under parts smaller and less sharply defined, and yellow of wings and tail paler.

*Young female*.—Similar to the young male, but malar stripe light vinaceous brown or pale fawn color.

Southern Lower California (Cape San Lucas; San José del Cabo; Santiago; San Ignacio; Santa Ana; Santa Anita; Triunfo; La Paz; Todos Santos; Ubai; 20 miles south of Calmallí).

*Geopicus (Colaptes . . .) chrysoides* MALHERBE, Rev. et Mag. de Zool., iv, Dec., 1852, 553 ("America;" type locality fixed by Anthony, Auk, xii, 1895, 347, as Cape San Lucas, Lower California).

*Geopicus chrysoides* MALHERBE, Mon. Pict., iv, 1862, 261, pl. 109, figs. 1, 4.

*C[olaptes] chrysoides* REICHENBACH, Handb. Scansores, Picinæ, 1854, 413.—COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.—RIDGWAY, Man. N. Am. Birds, 1887, 295, part.

*[Colaptes] chrysoides* BONAPARTE, Ateneo Italiano, ii, 1854, 126.—GRAY, Hand-list, ii, 1870, 202, no. 8834, part.—COUES, Key N. Am. Birds, 1872, 198, part.—SHARPE, Hand-list, ii, 1900, 201, part.

*Colaptes chrysoides* BAIRD, Proc. Ac. Nat. Sci. Phila., 1859, 302 (Cape San Lucas); Cat. N. Am. Birds, 1859, no. 99, part.—SCLATER, Cat. Am. Birds, 1862, 344 (Cape San Lucas).—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 120 (Mexico).—ELLIOT, New and Unfig. Birds N. Am., i, 1869, pl. 26 and text, part.—COUES, Check List, 1873, no. 313, part; 2d ed., 1882, no. 458, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 583, part, pl. 54, fig. 2 (not fig. 1).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 190, part; Nom. N. Am. Birds, 1881, no. 379, part.—BELDING, Proc. U. S. Nat. Mus., v, 1883, 543 (La Paz, Lower California), 349 (Victoria Mts., Lower California).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 414, part; 3d ed., 1910, 195, part.—BRYANT, Proc. Calif. Ac. Sci., ser. 2, 1889, 287, part (Cape district; Santa Margarita I.).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 16, part (La Paz, Triunfo, Todos Santos, San José, and Cape San Lucas, Lower California).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 405, part.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 138, part.—BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 108 (Cape San Lucas district; crit., etc.).

*Colaptes chrysoides chrysoides* GRINNELL (J.), Pacific Coast Avifauna, no. 3, June 25, 1902, 78, part.—RIDGWAY, Proc. Biol. Soc. Wash., xxiv, 1911, 32 (range).—

AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxix, 1912, 383.

*Picus chrysoides* SUNDEVALL, Consp. Av. Picin., 1866, 72, part.

#### COLAPTES CHRYSOIDES BRUNNESCENS Anthony.

##### SAN FERNANDO FLICKER.

Similar to *C. c. chrysoides*, but coloration decidedly darker and browner, color of pileum more rufescent (russet, or between russet and mars brown, in typical specimens), immaculate area of rump more restricted (sometimes whole rump spotted with black), wing and tail averaging shorter, and bill longer.

*Adult male*.—Length (skins), 245–265 (259); wing, 135–147 (142.3); tail, 84–94.5 (89.8); culmen, 32.5–37.5 (35.4); tarsus, 26–27 (26.7); outer anterior toe, 20.5–22 (21.1).<sup>a</sup>

*Adult female*.—Length (skins), 243–248 (246); wing, 139.5–142 (140.6); tail, 87.5–91.5 (89.1); culmen, 33–36 (34.3); tarsus, 25.5–28 (26.6); outer anterior toe, 19–20.5 (19.8).<sup>a</sup>

Pacific coast district of northern Lower California (San Fernando; 45 miles south of San Quintín; between San Fernando and El Rosário; 45 miles east of Sanduntún).

*Colaptes chrysoides* (not *Geopicus chrysoides* Malherbe) ANTHONY, Auk, xii, 1895, 139 (San Fernando, n. w. Lower California; crit.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 195, part.—BRYANT, Proc. Calif. Ac. Sci., 2d ser., 1889, 287, part (El Rosário, Lower California).

*Colaptes chrysoides brunescens* ANTHONY, Auk, xi, Oct., 1895, 347 (San Fernando, n. w. Lower California; coll. A. W. Anthony <sup>b</sup>).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 120 (Check List, no. 414a); xxix, 1912, 383.—THAYER and BANGS, Condor, ix, 1907, 136 (Rosário, Santa Ana, San Javier, and San Rosarito, Lower California; crit.).—RIDGWAY, Proc. Biol. Soc. Wash., xxiv, 1911, 32 (range).

[*Colaptes*] *brunescens* SHARPE, Hand-list, ii, 1900, 201, part.

#### COLAPTES CHRYSOIDES MEARNSI Ridgway.

##### MEARN'S GILDED FLICKER.

Similar to *C. c. chrysoides*, but larger and paler, with pileum more strongly cinnamomeous, black bars on back, etc., narrower, spots on outer webs of primaries more conspicuous (primary coverts also sometimes spotted), gray of throat, etc., lighter, and black spots on under parts usually smaller.

*Adult male*.—Length (skins), 261–275 (269); wing, 141–153 (148.2); tail, 85.5–100.5 (93.8); culmen, 35.5–40.5 (37.8); tarsus, 25–29 (27.7); outer anterior toe, 21.5–24 (22.5).<sup>c</sup>

*Adult female*.—Length (skins), 246–283 (266); wing, 143–153 (146.9); tail, 86–100 (92.6); culmen, 34–39.5 (36.6); tarsus, 27–29 (27.6); outer anterior toe, 20–23 (21.7).<sup>c</sup>

Southeastern California <sup>d</sup> and southern Arizona (Lowell; Quitovaquita; Phoenix; Pichaca Station, Pinál County; Fort Mojave; Big Bug Creek and Antelope Station, Yavapai County; Temple; Desert Station, Maricopa County; mouth of New River; Big Sandy River; San Pedro Valley; Santa Catalina Mountains) and southward through Sonora (Pozo de Luís; Senoyta; Opodepe; Colónia Lerdo; Camoa; Guaymas; Magdalena; Ysleta; Hermosillo; La Cobriza; Cedros) to Sinaloa (Culiacán).

<sup>a</sup> Five specimens.

<sup>b</sup> Now in coll. Carnegie Museum.

<sup>c</sup> Ten specimens.

<sup>d</sup> A. O. U. Check List, 3d ed., 1910, 195.

*Colaptes chrysoides* (not *Geopicus chrysoides* Malherbe) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 125 (Mexican boundary line); Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 6; Cat. N. Am. Birds, 1859, no. 99, part.—COOPER, Proc. Calif. Ac. Sci., 1861, 122 (Ft. Mojave, Arizona); Orn. Calif., 1870, 410, part (Ft. Mojave).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 56 (Ft. Mojave); Check List, 1873, no. 313, part; 2d ed., 1882, no. 458, part.—ELLIOT, New and Unfig. Birds N. Am., i, 1869, pl. 26 and text, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 583, part, pl. 54, fig. 1 (not fig. 2).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 190, part; Nom. N. Am. Birds, 1881, no. 379, part.—BREWSTER, Bull. Nutt. Orn. Club, vi, 1881, 73 (Tucson, Arizona); viii, 1883, 24 (Big Sandy R., Tucson, and Camp Lowell, Arizona; descr. young; crit.).—BELDING, Proc. U. S. Nat. Mus., vi, 1883, 344 (Guaymas, Sonora).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895) no. 414, part; 3d ed., 1910, 195, part.—SCOTT, Auk, iii, 1886, 429 (Tucson, San Pedro Valley, and Santa Catalina Mts., Arizona).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 16, part (Tucson, etc., Arizona; Ysleta and Hermosillo, Sonora).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 116 (s. Arizona, in valleys).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 405, part (Guaymas, Hermosillo, La Cibriza, Cedros, and Ysleta, Sonora).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 138, part.—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Culiacán, Sinaloa).—THAYER and BANGS, Proc. Biol. Soc. Wash., xix, 1906, 18 (Opodepe, Sonora).

[*Colaptes*] *chrysoides* GRAY, Hand-list, ii, 1870, 202, no. 8834, part.—COUES, Key N. Am. Birds, 1872, 198, part.—SHARPE, Hand-list, ii, 1900, 201, part.

[*Colaptes*] *chrysoides* COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.—RIDGWAY, Man. N. Am. Birds, 1887, 295, part.

*Colaptes chrysoides chrysoides* GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 78, part.

*Picus chrysoides* SUNDEVALL, Consp. Av. Picin., 1866, 72, part.

*Colaptes chrysoides mearnsi* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 32 (Quitovaquita, Arizona; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxix, 1912, 384.

### COLAPTES CAFER CAFER (Gmelin).

#### MEXICAN RED-SHAFTED FLICKER.

*Adult male*.—Pileum grayish brown (nearly broccoli brown to sepia) passing anteriorly into cinnamon-brown or russet on forehead (sometimes crown also cinnamonous), this into clearer cinnamon or russet on loreal and superciliary regions, the hindneck more grayish brown or brownish gray; back, scapulars, wing-coverts, and secondaries brown or grayish brown (drab or brownish drab),<sup>a</sup> barred, more or less broadly, with black, the black bars always much less than half as wide as the brown interspaces, except on secondaries, where much broader, those on the distal secondaries about as wide as the brown ones, here reduced to deep marginal indentations; rump white,

<sup>a</sup> As a rule, the color is lighter and grayer in specimens taken in late spring and summer, darker and browner in those which have recently molted.



immaculate (or nearly so) centrally, broadly barred or transversely spotted with black laterally; upper tail-coverts white, broadly barred with black, the black bars about as wide as the white interspaces, sometimes wider; upper surface of tail black, the inner web of middle pair of rectrices narrowly edged with pale brownish, or sometimes slightly spotted or indented along edge with the same, the shafts bright, orange-red (flame scarlet) basally, the shafts of other rectrices clearer flame scarlet for most of their length; primaries brownish black or blackish brown, margined at tip (except in worn plumage) with whitish and sometimes with middle portion spotted or indented with pale brownish, their shafts bright, clear flame scarlet; rictal and auricular regions, sides of neck, chin, throat, and foreneck plain gray (nearest mouse gray); malar region bright red (between poppy red and carmine); a large, broadly reniform, patch of uniform black on chest, this margined anteriorly (next to gray of foreneck) by a more or less distinct narrow band of pale vinaceous-pinkish; rest of under parts pale vinaceous-pink or vinaceous-white, passing into white on lower abdomen, anal region, and under tail-coverts, thickly spotted with black, these spots very sharply defined, mostly roundish or subcordate, larger on flanks, still larger and more transverse on under tail-coverts; under wing-coverts pale salmon-pink or flesh color, those along edge of wing still paler (pinkish white) and barred or flecked, more or less, with dusky; inner webs of remiges mostly deeper salmon-pink or flesh color (in closed wing), the outermost and longer primaries darker orange-reddish, passing into dusky on edge, but proximally broadly edged with the general salmon-pink color, the secondaries with distal half or more broadly barred with dusky, the pinkish interspaces forming broad spots along edge of inner web; under surface of tail dull orange-red (between coral red and orange chrome, but nearer the former) for the greater part but broadly and abruptly black terminally, the shafts within the red portion brighter and purer red (flame scarlet or orange chrome), the lateral rectrices usually with a small terminal spot of dull whitish or pale brownish and the outer web blackish exteriorly, with or without dull whitish or pale brownish bars or indentations; bill dull black or slate-blackish; iris reddish brown to dark brownish red; legs and feet dull grayish (grayish blue or bluish gray in life); length (skins), 252-290 (274); wing, 153-162 (157.4); tail, 97-116.5 (105.6); culmen, 32.5-37.5 (35.1); tarsus, 26-29 (27.5); outer anterior toe, 19-23 (21.1).<sup>a</sup>

*Adult female*.—Similar to the adult male, but malar region gray, like throat, etc. (usually light brownish anteriorly); length (skins),

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<sup>a</sup> Twenty specimens.



243-290 (271); wing, 151-159 (156); tail, 95-108.5 (104.1); culmen, 33-36 (34); tarsus, 26.5-28.5 (27.6); outer anterior toe, 19-22 (20.7).<sup>a</sup>

*Young male*.—Similar to the adult male, but coloration duller, gray of throat, etc., duller, more brownish, black jugular patch smaller and less sharply defined, black spots on under parts less sharply defined, less rounded, feathers of pileum indistinctly tipped

<sup>a</sup> Seventeen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from southeastern Mexico (Vera Cruz, Morelos, and Mexico).....	158.4	108.1	35.6	27.3	21.1
Ten adult males from southwestern Mexico (Guerrero, Michoacan, and Jalisco).....	156.4	102.8	34.7	27.4	21
Three adult males ( <i>C. c. cafer</i> ?) from Durango.....	161.5	106.7	37.5	28	21.7
Two adult males ( <i>C. c. cafer</i> ?) from Chihuahua.....	159.7	104.2	36.7	28.2	22
Five adult males ( <i>C. c. collaris</i> ) from Arizona (3), New Mexico (1) and western Texas (1).....	168.6	111.1	36.6	28.8	21.9
Ten adult males ( <i>C. c. collaris</i> ) from California.....	165	113.2	38	29.7	22.4
Six adult males ( <i>C. c. collaris</i> ) from Oregon.....	165.5	116	37.7	29.5	22.6
Two adult males ( <i>C. c. collaris</i> ) from northern Lower California..	161	105.7	40.2	29.2	22.5
Two adult males ( <i>C. c. collaris</i> ) from Santa Cruz Island, California.....	157	102.5	36	29	24
Four adult males ( <i>C. c. collaris</i> ) from Utah.....	165.5	112.8	37.3	29.6	22.5
Ten adult males ( <i>C. c. collaris</i> ) from Colorado.....	166.4	112	38.4	29.8	22.2
One adult male ( <i>C. c. collaris</i> ) from Wyoming.....	167.5	107	37	32	23.5
Seven adult males ( <i>C. c. collaris</i> ) from Montana.....	165.6	114.2	37.8	29.6	22.4
Ten adult males ( <i>C. c. saturator</i> ) from Washington and British Columbia.....	169.9	118.7	39.8	30	23.9
Six adult males ( <i>C. c. rufipileus</i> ) from Guadalupe Island.....	150	110	38.9	27.3	22.2
FEMALES.					
Seventeen adult females ( <i>C. c. cafer</i> ) from southern Mexico.....	156	104.1	34	27.6	20.7
Five adult females ( <i>C. c. cafer</i> ) from northern Mexico.....	157.1	101.7	34.8	27.9	21.6
Seven adult females ( <i>C. c. collaris</i> ) from Arizona (3), New Mexico (3) and western Texas (1).....	163.6	106.5	37	28.8	22.1
Ten adult females ( <i>C. c. collaris</i> ) from California.....	162.1	109.8	36.5	27.4	22.1
Five adult females ( <i>C. c. collaris</i> ) from Oregon.....	163.9	110.7	37.6	30.1	22.1
One adult female ( <i>C. c. collaris</i> ) from Utah.....	160.5	109	35.5	29	21
Two adult females ( <i>C. c. collaris</i> ) from Colorado.....	167.2	113	38.7	28.2	21
Three adult females ( <i>C. c. collaris</i> ) from Wyoming.....	163.5	108.5	35.8	28.7	21.8
Seven adult females ( <i>C. c. collaris</i> ) from Montana.....	161.9	110.9	35.2	29.1	21.9
One adult female ( <i>C. c. collaris</i> ) from South Dakota.....	169.5	118.5	36	30	22.5
Ten adult females ( <i>C. c. saturator</i> ) from Washington and British Columbia.....	167.1	117	37.7	28.7	22.7
Seven adult females ( <i>C. c. rufipileus</i> ) from Guadalupe Island..	152.5	110.4	39	28	21.7

Specimens from the States of Guanajuato, Durango, Nuevo Leon, and Chihuahua, while small like those from the more southern parts of Mexico are decidedly paler and grayer in coloration, in this respect being undistinguishable from examples of *C. c. collaris* from the interior districts of the United States.

with paler, and red malar stripes less bright, less uniform, and black terminal area on under side of tail not sharply defined.

*Young female*.—Similar to the young male, but malar region dull grayish brown or brownish gray instead of red.

Central and southern Mexico, in States of Tamaulipas (Ciudad Victoria, in southern part), Vera Cruz (Las Vigas; Orizaba; Miradór; Jalapa; Suapám; Monte Alto; Cofre de Perote), Puebla (base of Orizaba; San Martin Texmelucán; Huejotzingo; Totimehuacán; San Miguel Molino), Mexico (Volcan de Popocatepetl; Volcan de Ixtaccihuatl; Ixtapalapa; Tetelco; Xochimilco; Chimalapa; Tacubaya; Huipulco, Tlalpám; Temiscáltepec; near City of Mexico), Hidalgo (Reál del Monte), Morelos (Huitzilác; Tetela del Volcan), San Luis Potosí (Sierra de San Luis Potosí), Aguas Calientes (Sierra de Xeres; Sierra de Calvillo), Jalisco (Volcan de Nieve; Volcan de Colima; Los Masos; Tonila; La Pisagua; Sierra de Bolaños; Sierra Madre de Nayarít; Zapotlán), Michoacán (Patzcuaro), Tepic (Sierra de Nayarít; Sierra Madre), Guerrero (Omiteme; Sierra Madre del Sur), and Oaxaca (mountains near Ozocótepec; La Parada; Totóntepec; Tonaguía; Villa Alta).

[*Picus*] *cafer* GMELIN, Syst. Nat., i, pt. i, 1788, 431 (Cape of Good Hope; error).—LATHAM, Index Orn., i, 1790, 242.

*Picus cafer* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxvi, 1818, 102.

*Colaptes* *cafer* STEJNEGER, Stand. Nat. Hist., iv, 1885, 428, in text, part.—RIDGWAY, Man. N. Am. Birds, 1887, 296, part.

*Colaptes cafer* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 413, part.—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 214 (base of Volcan de Orizaba, Puebla; Volcan de Ixtaccihuatl and V. de Popocatepetl, 11,000–12,000 ft.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 134, part.—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 43 (Las Vigas, Vera Cruz, 8,000 ft., breeding).

*Colaptes cafer cafer* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 195.

*P[icus] lathamii* WAGLER, Syst. Av., 1827, *Picus*, sp. 85 (new name for *Picus cafer* Gmelin).

*Colaptes mexicanus* SWAINSON, Philos. Mag., n. s., i, 1827, 440 (Real del Monte, Hidalgo, Mexico; coll. Bullock); Fauna Bor.-Am., ii, 1831, pp. xxvi, 315; Classif. Birds, ii, 1837, 3.—SCLATER, Proc. Zool. Soc. Lond., 1856, 307 (Suapam, Vera Cruz); 1858, 305 (La Parada, Oaxaca); 1859, 367 (Jalapa, Vera Cruz); 1864, 177 (near City of Mexico); Cat. Am. Birds, 1862, 344, part (Mexico).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 120, part (in synonymy).—GRAY, List Birds Brit. Mus., Pictidae, 1868, 121, part (Mexico).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (alpine reg. Vera Cruz).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 578, part (Oaxaca; Vera Cruz).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 160 (San Martin Texmelucan, and Totimehuacan, Puebla).—HARRITT, Cat. Birds Brit. Mus., xviii, 1890, 17, part (localities in Zacatecas?, San Luis Potosí, Jalisco, Tepic, Guerrero, Oaxaca, and Vera Cruz), 568 (Sierra Bolaños, Jalisco).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 402, part (Sierra Bolaños, Volcan de Colima, and Zapotlan, Jalisco; Sierra

de Xeres, and Sierra de Calvillo, Aguas Calientes; Sierra de San Luis Potosí; Sierra de Nayarit and Sierra Madre, Tepic; Guanajuato; Tetelco, Chimalpa, Ixtapalapa, and Temiscaltepec, Mexico; Real del Monte, Hidalgo; Popocatepetl, Ixtaccihuatl, San Miguel Molino, Texmelucan, and Totimehuacan, Puebla; Las Vigas, Suapam, Jalapa, Orizaba, Monte Alto, and Cofre de Perote, Vera Cruz; La Parada, Totontepec, Tonagua, and Villa Alta, Oaxaca; Omilteme, Guerrero).

[*Colaptes*] *mexicanus* GRAY, Hand-list, ii, 1870, 202, no. 8830, part.—COUES, Key N. Am. Birds, 1872, 198, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101, part.—SHARPE, Hand-list, ii, 1900, 201.

*C[olaptes] mexicanus* COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.

*Geopicus mexicanus* MALHERBE, Mon. Pict., ii, 1862, 262, part, pl. 110, figs. 4, 5.

*Picus mexicanus* SUNDEVALL, Consp. Av. Picin., 1866, 72, part.

*P[icus] rubicatus* WAGLER, Isis, 1829, 516 (Mexico; coll. Berlin Mus.).

*Colaptes rubricatus* BONAPARTE, Proc. Zool. Soc. Lond., 1837, 109 (Mexico); Nuov. Sc. Nat. Bol., ii, 1839, 403 (Mexico).—BOLLE, Journ. für Orn., 1858, 319, part (Mexico; habits).

[*Colaptes*] *rubicatus* BONAPARTE, Consp. Av., i, 1850, 114.

### COLAPTES CAFER COLLARIS (Vigors).

#### RED-SHAFTED FLICKER.

Similar to *C. c. cafer*, but decidedly larger, and averaging decidedly paler and more grayish (or less brownish) in coloration.

*Adult male*.—Length (skins), 257–320 (280); wing, 156–174 (165.8); tail, 101–121 (112.6); culmen, 33.5–40 (37.9); tarsus, 27–32 (29.8); outer anterior toe, 20.5–24 (22.4).<sup>a</sup>

*Adult female*.—Length (skins), 265–311 (282); wing, 152–173 (163.2); tail, 99.5–120 (109.8); culmen, 34–41.5 (36.9); tarsus, 27–31.5 (28.7); outer anterior toe, 20–23 (21.8).<sup>b</sup>

Western United States and southwestern British Provinces (except coast district from northern California northward) and northern Mexico; north to British Columbia (east of Coast Range), central Alberta and southwestern Saskatchewan, east to western portion of the Great Plains (where interbreeding extensively with *C. auratus borealis* and *C. auratus luteus*), occasionally or accidentally to western Iowa (frequent), eastern Kansas (in winter), Oklahoma (Caddo), etc.; south over northern Mexico, in States of Tamaulipas (northern portion), Nuevo León,<sup>c</sup> Coahuila (Agua Nueva), Guanajuato,<sup>c</sup> Chihuahua<sup>c</sup> (Chupadero; San José; Concepción; Chihuahua City; Temosachic; Colonia Garcia; Colonia Diaz; Pacheco; Chihuahua), Sonora (Hermosillo), Zacatecas (Sierra de Jerez), northwest-ern Durango<sup>c</sup> (Rosario; Ciudad; Rancho Santuario; La Boquilla; Las

<sup>a</sup> Forty-five specimens.

<sup>b</sup> Thirty-six specimens.

<sup>c</sup> As already stated on p. 31, specimens from Guanajuato, Durango, Nuevo Leon, etc., while small, like *C. c. cafer*, have the paler, grayer coloration of *C. c. collaris*, being thus intermediate between the two forms. On the whole, they seem best referred to the latter.



Bocas; Cienega de las Vacas; Rio Sestin; Arroyo del Buéy), and northern Lower California (Nachiguero Valley; San Pedro Martir Mountains, 7,000–10,000 feet; Santa Ulalia; 45 miles east of San Quintín).

*Colaptes collaris* VIGORS, Zool. Journ., iv, 1829, 354 (Monterey, California); Zool. Voy. "Blossom," 1839, 24, pl. 9.—GAMBEL, Journ. Ac. Nat. Sci. Phila., i, 1847, 56 (New Mexico to California).—McCALL, Proc. Ac. Nat. Sci. Phila., 1851, 220 (New Mexico).—BONAPARTE, Conspectus, i, 1850, 114.—BAIRD, in Rep. Stansbury's Exp. Gt. Salt Lake, 1852, 333 (Monterey).

*C[olaptes] collaris* REICHENBACH, Handb. Scansores, Picinæ, 1854, 414, pl. 667, fig. 4421.

[*Colaptes*] *collaris* SHARPE, Hand-list, ii, 1900, 201.

*C[olaptes] cafer collaris* RIDGWAY, Man. N. Am. Birds, 1887, 296, footnote, in text (crit.).

*Colaptes cafer collaris* NELSON, Auk, xvii, 1900, 123 (crit.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xviii, 1901, 301; Check List, 3d ed., 1910, 195.—GRINNELL, Pacific Coast Avifauna, no. 3, 1902, 39 (California range).—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, Mendocino Co., n. California; crit.).—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxii, 1906, 165 (Rosario, Rancho Santuario, La Boquilla, Las Bocas, etc., n. w. Durango, breeding; crit.).—LARSEN, Wilson Bull., no. 60, 1907, 114 (Lyman Co., South Dakota, summer res.).—CAMERON, Auk, xxiv, 1907, 270 (Custer and Davenport counties, Montana, common, breeding; crit.; mostly "with *auratus* blood").—ANDERSON, Proc. Davenport Ac. Sci., xi, 1907, 279 (w. Iowa, frequent).—BENT, Auk, xxv, 1908, 26 (s. w. Saskatchewan, common, breeding; interbreeding with *C. auratus borealis*).—SETON, Auk, xxv, 1908, 453 (Winnipeg, 1 spec., Sept. 30, 1904).—PREBLE, North Am. Fauna, no. 27, 1908, 388 (w. Alberta; Ft. Chippewyan, 1 spec.).—LINTON, Condor, x, 1908, 84 (San Clemente I., California), 127 (Santa Cruz I., California).—KERMODE, Prov. Mus. Brit. Columbia, 1909, 50 (east of Cascade range).—VISHER, Auk, xxvi, 1909, 148 (w. South Dakota, abundant).—BEAL, Bull. no. 34, U. S. Biol. Surv., 1910, 25 (food).—FERRY, Auk, xxvii, 1910, 199 (Saskatchewan, common).—VISHER, Auk, xxviii, 1911, 12 (Harding Co., w. South Dakota, mostly west of Little Missouri R., breeding).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 59 (food).—ISELY, Auk, xxix, 1912, 36 (Sedgewick Co., Kansas, Dec., Feb.).—HOWELL (A. B.), Condor, xiv, 1912, 190 (Todos Santos Islands, Lower California; straggler).

*Colaptes mexicanus* (not of Swainson, 1827) SWAINSON, Fauna Bor.-Am., ii, 1831, pp. xxvi, 315, part.—JARDINE, ed. Wilson's Am. Orn., i, 1832, 43, 44, footnote.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 667.—SCLATER, Proc. Zool. Soc. Lond., 1857, 127 (San José Valley, California); Cat. Am. Birds, 1862, 344, part (synonymy only).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 120, part; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 6 (Saltillo and Agua Nueva, Coahuila; San Elizario, Texas); Cat. N. Am. Birds, 1859, no. 98, part.—BLAKISTON, Ibis, 1862, 3 (int. British America).—DRESSER, Ibis, 1865, 470 (San Antonio, Nueces R., and Piedras Negras, Texas, in winter).—GRAY, List Birds Brit. Mus., Pictidae, 1868, 121, part (San Francisco).—COOPER, Orn. Calif., 1870, 408.—HOLDEN, Proc. Bost. Soc. N. H., xv, 1872, 207 (Sherman, Wyoming; habits).—COUES, Check List, 1873, no. 314, part; 2d ed., 1882, no. 459, part; Birds Northwest, 1874, 294.—SNOW, Birds Kansas, 1873, 3 (Lawrence, e. Kansas, in winter).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 578, pl. 55, figs. 3, 4.—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 79 (Utah).—RIDGWAY, Orn. 40th Parallel, 1877, 555 (localities in Nevada and Utah).—HARGITT, Cat. Birds



- Brit. Mus., xviii, 1890, 17, part (localities in w. United States; Chihuahua; Durango).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 402, part (Hermosillo, Sonora; Chupadero, San José, Concepcion, Chihuahua City, and Temosachic, Chihuahua; Ciudad Durango, Durango).
- Colaptes "mexicanus"* ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 63 (Great Porcupine Creek, Fort Rice, Yellowstone R., Musselshell R., etc., North Dakota and Montana; crit.; includes hybrid series).
- [*Colaptes*] *mexicanus* GRAY, Hand-list, ii, 1870, 202, no. 8830, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101, part.—COUES, Key N. Am. Birds, 1872, 198, part.
- C[*olaptes*] *mexicanus* MAXIMILIAN, Journ. für Orn., 1858, 421 (Fort Union).—COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.
- Picus mexicanus* AUDUBON, Orn. Biog., v, 1839, 174, pl. 416, fig. 5; Synopsis, 1839, 185; Birds Am., oct. ed., iv, 1842, 290, pl. 274.—SUNDEVALL, Consp. Av. Picin., 1866, 72, part.
- Picus (Colaptes) mexicanus* NUTTALL, Man. Orn. U. S. and Can., Water Birds, 1834, 603.
- Geopicus mexicanus* MALHERBE, Mon. Pict., ii, 1862, 262, part.
- Colaptes auratus*, var. *mexicanus* RIDGWAY, Bull. Essex Inst., v, Nov., 1873, 185 (Colorado).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 48 (Utah), 67 (Platte R.).
- Colaptes auratus mexicanus* RIDGWAY, Bull. Essex Inst., vi, Oct., 1874, 171 (Sacramento, California); vii, 1875, 13 (Carson, Nevada), 19 (West Humboldt Mts., Nevada), 21 (Ruby Mts., Nevada), 34 (Parleys Park, Utah); Proc. U. S. Nat. Mus., iii, 1880, 7, 190, part; Nom. N. Am. Birds, 1881, no. 378b, part.—MEARNS, Bull. Nutt. Orn. Club, iv, 1879, 195 (Ft. Klamath, Oregon).—HENSHAW, Auk, iii, 1886, 79 (upper Pecos R., New Mexico).
- Colaptes auratus*, var. *mexicanus* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 38 (Nevada).
- [*Colaptes auratus*.] Var. *mexicanus* JORDAN, Man. Vertebr. E. U. S., 4th ed., 1884, 105.
- Colaptes auratus*,  $\beta$ . *mexicanus* RIDGWAY, Bull. Nutt. Orn. Club, iii, April, 1878, 67 (Calaveras Co., California).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 430 (Marysville, Stockton, etc., California).
- Colaptes rubricatus* (not *Picus rubicatus* Wagler) BONAPARTE, Geog. and Comp. List, 1838, 40.—BOLLE, Journ. für Orn., 1858, 319, part (habits).
- Colaptes cafer* (not *Picus cafer* Gmelin) AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 413, part (mostly).—SCOTT, Auk, iii, 1886, 428 (Santa Catalina Mts., Arizona, mostly above 6,000 ft.).—LLOYD, Auk, iv, 1887, 191 (Tom Green, Concho, and Uvalde counties, w. Texas, in winter).—COOKE, Bird Migr. Miss. Val., 1888, 134 (Manhattan, Kansas; Caddo, Oklahoma; San Angelo, Texas; in winter).—BECKHAM, Proc. U. S. Nat. Mus., x, 1888, 665 (San Antonio, Texas).—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 287 (San Rafael, San Pedro Martir Mts., Lower California, 7,000–10,000 ft.).—HASBROUCK, Auk, vi, 1889, 239 (Eastland Co., Texas, common).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 139 (Ashcroft, int. Brit. Columbia).—FANNIN, Check List Birds Brit. Col., 1891, 29 (e. of Cascade range).—ATTWATER, Auk, ix, 1892, 235 (San Antonio, Texas, in migration).—SINGLEY, Rep. Geol. Surv. Texas, 1894, 350 (Lee Co., Texas, rare winter visitant).—BENDIRE, Life Hist. Birds N. Am., ii, 1895, 134, part.—GRINNELL (J.), Auk, xv, 1898, 234 (Santa Catalina I., California).—CARY, Auk, xviii, 1901, 234 (Black Hills, Wyoming).
- Colaptes mexicanoides* (not of Lafresnaye) BAIRD, in Rep. Stansbury's Expl. Great Salt Lake, 1852, 333 (California).—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 91 (Rio Grande, Texas).

**COLAPTES CAFER SATURATION (Ridgway).****NORTHWESTERN FLICKER.**

Similar to *C. c. collaris* but larger and darker (darker even than *C. c. cafer*), the upper parts browner, the under parts of body more strongly vinaceous.

*Adult male*.—Length (skins), 297–312 (306); wing, 164.5–177.5 (169.9); tail, 113–124 (118.7); culmen, 37–42.5 (39.8); tarsus, 29–31 (30); outer anterior toe, 22.5–25 (23.9).<sup>a</sup>

*Adult female*.—Length (skins), 285–313 (297); wing, 163.5–171 (167.1); tail, 110–123.5 (117); culmen, 36–40 (37.7); tarsus, 26–30.5 (28.7); outer anterior toe, 21–24 (22.7).<sup>a</sup>

Northwest coast district, from northern California (Humboldt Bay, etc.) to southern Alaska (Sitka; Taku River; Kupreanoff, Dall, Gravina, Revillagigedo, and Etolin islands).

*Colaptes mexicanus* (not of Swainson) NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 667, part.—SCLATER, Proc. Zool. Soc. Lond., 1859, 236 (Vancouver I.).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 163 (Washington and Oregon west of Cascade Mts.).—LORD, Proc. Roy. Artil. Inst. Woolw., iv, 1864, 112 (Brit. Columbia).—BROWN, Ibis, 1868, 419 (Vancouver I.).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 275 (Sitka, Alaska).—COOPER, Orn. Calif., 1870, 408, part.—COUES, Check List, 1873, no. 314, part; 2d ed., 1882, no. 459, part; Birds N. W., 1874, 294, part.—SALVIN, Proc. Zool. Soc. Lond., 1883, 425 (Esquimault, Vancouver I.).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 17, part (Vancouver, San Juan, and Orcas islands, and Esquimault, Brit. Columbia; Whitby Island, Washington; Albany, Oregon).

[*Colaptes*] *mexicanus* COUES, Key N. Am. Birds, 1872, 198, part.

[*Colaptes*] *mexicanus* COUES, Key N. Am. Birds, 2d ed., 1884, 493, part.

*Colaptes auratus mexicanus* RIDGWAY, Nom. N. Am. Birds, 1881, no. 378b, part.

*Colaptes mexicanus saturation* RIDGWAY, Proc. Biol. Soc. Wash., ii, April 10, 1884, 90 (Neah Bay, Washington; coll. U. S. Nat. Mus.).

*Colaptes cafer saturation* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 413a; 3d ed., 1910, 195.—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 161 (Sitka).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 206 ("Redwood region" and Red Bluff, California).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 139 (Westminster, Brit. Columbia).—FANNIN, Check List Birds Brit. Col., 1891, 29 (west of Cascade Mts.).—PALMER (T. S.), Auk, ix, 1892, 309 (Grays Harbor, Washington).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 137.—GRINNELL (J.), Auk, xv, 1898, 127 (Sitka); Pacific Coast Avifauna, no. 3, 1902, 39 (California range).—KOBBE, Auk, xvii, 1900, 352 (Cape Disappointment, Washington, resident).—OSGOOD, North Am. Fauna, no. 21, 1901, 45 (Cumshewa Inlet and Massett, Queen Charlotte Islands).—RATHBUN, Auk, xix, 1902, 135 (Seattle, Washington, resident).—ANDERSON and GRINNELL, Proc. Ac. Nat. Sci. Phila., 1903, 9 (Siskiyou Mts., n. California; crit.).—BOWLES, Auk, xxiii, 1906, 144 (Tacoma, Washington, resident).—EDSON, Auk, xxv, 1908, 434 (Bellingham, Washington, resident).—CLARK, Proc. U. S. Nat. Mus., xxxviii, 1910, 60 (Dockton, Washington; Union Bay, Vancouver I.).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 70 (Kupreanof, Dall, Gravina, Revillagigedo, and Etolin islands, and Taku R., Alaska; crit.; habits); Rep. Birds and Mam. Vanc. I., 1912, 39 (crit.).

<sup>a</sup> Ten specimens.

*[Colaptes] cafer saturator* RIDGWAY, Man. N. Am. Birds, 1887, 296.

*[Colaptes] saturator* SHARPE, Hand-list, ii, 1900, 201.

*Colaptes cafer* (not *Picus cafer* Gmelin) LAWRENCE (R. H.), Auk, ix, 1892, 44 (Grays Harbor, Washington).

**COLAPTES CAFER RUFIPILEUS (Ridgway).**

**GUADALUPE FLICKER.**

Similar in coloration to *C. c. saturator*, but pileum much more rufescent (the forehead and superciliary region and upper portion of loreal region deep cinnamon-rufous), black terminal band on under surface of tail broader, and smaller, with relatively longer bill.

*Adult male*.—Length (skins), 284–301 (290); wing, 149–152 (150); tail, 104–113 (110); culmen, 37–41.5 (38.9); tarsus, 26.5–28 (27.3); outer anterior toe, 21–23 (22.2).<sup>a</sup>

*Adult female*.—Length (skins), 283–314 (296); wing, 148.5–158 (152.5); tail, 102.5–114 (110.4); culmen, 37–43 (39); tarsus, 26.5–29 (28); outer anterior toe, 20.5–23 (21.7).<sup>b</sup>

Guadalupe Island, off Pacific coast of Lower California.

*Colaptes mexicanus rufipileus* RIDGWAY, Bull. U. S. Geol. and Geog. Surv. Terr., ii, no. 2, April 1, 1876, 191 (Guadalupe Island, Lower California; col. U. S. Nat. Mus.).

*Colaptes rufipileus* RIDGWAY, Bull. Nutt. Orn. Club, ii, July, 1877, 60, 61; Proc. U. S. Nat. Mus., iii, 1880, 190, 219, 229; Nom. N. Am. Birds, 1881, no. 380.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 415, 3d ed., 1910, 195.—BRYANT (W. E.), Bull. Calif. Ac. Sci., ii, 1887, 285 (habits; descr. eggs; crit.); Proc. Calif. Ac. Sci., ser. 2, 1889, 287.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 140.—THAYER and BANGS, Condor, x, 1908, 104.

*[Colaptes] rufipileus* RIDGWAY, Man. N. Am. Birds, 1887, 296.

*[Colaptes] rufipileus* SHARPE, Hand-list, ii, 1900, 201.

*Colaptes mexicanus* (not of Swainson) HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 17, part.

**COLAPTES MEXICANOIDES Lafresnaye.**

**GUATEMALAN FLICKER.**

*Adult male*.—Pileum and hindneck uniform deep cinnamon-rufous or rufous-chestnut; back, scapulars, wing-coverts, and secondaries broadly barred with black and light brown (nearly wood brown to slightly vinaceous cinnamon), the black and brown bars of nearly equal width, except on wings, where the former are broader, the pale brown bars on the secondaries (except proximal ones, or “tertials”) interrupted by a broad median extension of the black; rump and upper tail-coverts white, the former with a few cordate or V-shaped spots of black, the latter broadly barred, or transversely spotted, with black; primaries and rectrices black, with shafts (also those of secondaries) bright orange or saturn red, except for terminal portion of rectrices and shafts of middle pair of rectrices, which are black; inner web of middle pair of rectrices and terminal portion of

<sup>a</sup> Six specimens.

<sup>b</sup> Seven specimens.



outer web of lateral rectrix usually with a few irregular bars of pale grayish brown near edge, the outer web of middle rectrices sometimes narrowly edged, or indistinctly barred along edge, with the same; loreal, suborbital, and auricular regions, chin, throat, foreneck, and sides of neck uniform gray (about no. 6<sup>a</sup> or between that and smoke gray); malar region bright poppy red, the feathers first black then gray beneath surface; a large crescentic or semilunar patch of black on chest; rest of under parts dull white medially, shading into very pale pinkish gray or ecru drab laterally, each feather with a subterminal cordate or roundish spot of black, these markings more transverse or bar-like on flanks and under tail-coverts; under wing-coverts pale grayish pink, those along margin of wing narrowly and irregularly barred with black; inner webs of remiges (except outermost) pale buff-pink or salmon-pink for basal half (approximately) the terminal portion dusky, strongly glossed or suffused with orange-pink or salmon-pink, except along edges; under side of tail rufous-orange broadly tipped with black, the lateral rectrices with a small terminal spot of dull whitish or pale dull orange and sometimes with a few narrow bars of the same alternating with much wider interspaces of blackish along edge; bill dusky horn color (in dried skins); legs and feet dusky grayish or horn color (in dried skins); length (skins), 259-329 (276); wing, 153-163 (157.9); tail, 95.5-115 (111.7); culmen, 36-40.5 (38.2); tarsus, 28-30 (28.8); outer anterior toe, 22-24 (22.7).<sup>b</sup>

*Adult female*.—Similar to the adult male but red malar stripe replaced by a similar area of cinnamon; length (skins), 265-300 (288); wing, 151-163 (154.7); tail, 104.5-113.5 (110.5); culmen, 34.5-38.5 (35.6); tarsus, 25-29 (27.7); outer anterior toe, 21-24 (21.8).<sup>c</sup>

Highlands of Chiapas (San Cristóbal) and Guatemala (Cobán to Chiséc; Tactic; Cobán; Hacienda Chancól; Todos Santos; Volcan de Santa Maria; Calderas and Pajál Grande, Volcan de Fuego; Barranca de los Chocoyas; Lake Atitlán; near Tecpám, 5,000-9,500 feet;

<sup>a</sup> Ridgway's "Nomenclature of Colors," plate 2.

<sup>b</sup> Sixteen specimens.

<sup>c</sup> Eight specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Nine adult males from Guatemala.....	157	110.8	37.9	28.8	22.7
Seven adult males from Chiapas (San Cristobal).....	159.1	112.9	38.2	28.9	22.8
FEMALES.					
Seven adult females from Guatemala.....	153.5	110.3	35.6	27.7	21.7
One adult female from Chiapas (San Cristobal).....	163	112	34.5	27.5	22



Barranca Honda; El Rincón, San Marcos; Ciupaché; plains of Quezaltenango; ridge above Totonicapám). Northern Nicaragua (Matagalpa).<sup>a</sup>

*P[icus] rubricatus* WAGLER, Isis, 1829, 516, part (female).

*Colaptes rubricatus* GRAY, Gen. Birds, ii, 1846, 446.

*Colaptes rubricatus* GRAY, Gen. Birds, ii, 1846, pl. 111.

*Geopicus rubricatus* MALHERBE, Mon. Pict., ii, 1862, 265, pl. 110, figs. 1, 2.

*Col[aptes] mexicanoides* LAFRESNAYE, Rev. Zool., vii, Feb., 1844, 42 ("Mexico," coll. Lafresnaye).

*Colaptes mexicanoides* SCLATER and SALVIN, Ibis, 1859, 137 (Coban and Los Chocoyas, Guatemala; crit.).—SCLATER, Cat. Am. Birds, 1862, 344 (Coban).—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 121.—SALVIN and GODMAN, Ibis, 1892, 327 (Matagalpa, Nicaragua); Biol. Centr.-Am., Aves, ii, 1895, 404 (localities in Guatemala; Matagalpa).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 94 (Lake Atitlan and near Tecpam, Guatemala, 5,000–9,500 ft.; descr. nest; crit.).

[*Colaptes*] *mexicanoides* GRAY, Hand-list, ii, 1870, 202, no. 8831.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101.

[*Colaptes*] *mexicanoides* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 574.—RIDGWAY, Man. N. Am. Birds, 1887, 296.—ALLEN, Bull. Am. Mus. N. H., iv, 1892, 25, 37 (crit.).

*Geopicos mexicanoides* MALHERBE, Mém. Ac. Metz, xxx, 1849, 359.

*Colaptes collaris* (not of VIGORS) BONAPARTE, Consp. Av., i, 1850, 114.

[*Colaptes*] *collaris* BONAPARTE, Ateneo Italiano, ii, 1854, 126.

*Picus submericanus* SUNDEVALL, Consp. Av. Pictin., 1866, 72 (new name for *C. mexicanoides*; the latter rejected on grounds of purism).

*Colaptes submericanus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 21 (Barranca Honda, Tactic, Coban, and Volcan de Fuego, Guatemala).

[*Colaptes*] *sub-mexicanus* SHARPE, Hand-list, ii, 1900, 201.

#### Genus NESOCELEUS Sclater and Salvin.

*Nesocoleus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101, 155. (Type, by original designation, *Colaptes fernandinæ* Vigors.)

Rather large Pictidæ (wing 144–157 mm.) similar to *Colaptes*, but with nostrils wholly exposed (no trace of antrorse prefrontal plumes), no black jugular patch, no white on rump, and with whole of body, wings, and tail barred with black and brownish yellow.

Bill about as long as head, rather slender, very slightly decurved terminally, its tip pointed (not at all chisel-shaped), its width at posterior end of nostrils decidedly greater than its depth at same point; ridge of culmen indistinct basally, distinct terminally; an indistinct supranasal ridge, running parallel with culmen for about basal half of maxilla; gonys about as long as mandibular rami, straight or very faintly concave terminally, slightly prominent basally, rather distinctly ridged; commissure nearly straight to near base, where slightly deflected. Nostril wholly exposed, rather large, roundish. Feathers of frontal antiæ small, short, and erect (not

<sup>a</sup> I have not seen a specimen from Nicaragua, and doubt whether specimens from that country are subspecifically identical with those from Guatemala. They should be carefully compared.

antrorse); no obvious bristly tips to feathers of rictus, malar apex, nor chin. Wing moderately long, the longest primaries exceeding secondaries by much less than length of exposed culmen; sixth to eighth primaries longest, ninth about equal to second, the tenth (outermost) a little more than half as long as ninth. Tail more than two-thirds as long as wing, the rectrices rather narrow, gradually acuminate. Tarsus longer than outer hind toe with claw, but shorter than outer front toe with claw, rather slender; toes rather slender and claws rather weak.

*Coloration*.—Whole body, wings, and tail barred with black and brownish yellow or buffy; shafts of remiges and rectrices on under side (only) light yellow; pileum and sides of head cinnamon, the former narrowly streaked with black; adult male with a broad black malar stripe.

*Range*.—Island of Cuba; monotypic.

### NESOCLEUS FERNANDINÆ (Vigors).

#### FERNANDINA'S FLICKER.

*Adult male*.—Pileum and hindneck light wood brown or cinnamon, narrowly streaked with black; loreal, orbital, rictal, and auricular regions immaculate light wood brown, usually somewhat paler on suborbital and rictal regions; rest of upper parts dull black, sharply and very regularly barred with pale dull yellow (the bars on dorsum and tail sometimes deeper yellow), the bars much narrower on rectrices (where extending entirely across both webs), much broader on primaries; malar region black; chin and throat thickly streaked with black and white or yellowish white, the black streaks broader than the whitish ones; rest of under parts light buffy yellowish (dull pale maize yellow to nearly ochre yellow), sharply and very regularly barred with black, the black bars broadest on chest and flanks; under wing-coverts light creamy yellow (naples yellow), more or less barred or flecked with blackish, at least along edge of wing; inner webs of remiges dusky grayish olive (changing to yellowish in certain lights), spotted along edge (except on distal portion of outer primaries) with light creamy yellow, their shafts clear naples yellow; under surface of tail olive, changing to dull golden yellow, narrowly barred with dull yellow (naples or maize yellow), the shafts of rectrices clear naples or maize yellow; bill dull black; legs and feet dusky grayish or horn color (in dried skins); length (skins), 297–312 (304.5); wing, 146.5–157 (151.6); tail, 112.5–123 (118.5); culmen, 39–42.5 (41.1); tarsus, 28–31 (30.3); outer anterior toe, 23–24 (23.6).<sup>a</sup>

*Adult female*.—Similar to the adult male, but malar region streaked with black and white, like chin and throat; length (skins), 307–320 (313); wing, 144–155.5 (148.6); tail, 102–126 (113.7); culmen, 36.5–40 (38.4); tarsus, 28.5–31.5 (30); outer anterior toe, 21–24 (22.3).<sup>a</sup>

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<sup>a</sup> Five specimens.

## Island of Cuba (near Havana; San Diego de los Baños; Holquín).

*Colaptes fernandinae* VIGORS, Zool. Journ., iii, Dec., 1827, 445 (near Havana, Cuba; coll. Zool. Soc.).—D'ORBIGNY, in La Sagra's Hist. Fis. Nat. Cuba, Aves, 1839, 112, pl. 24; French ed., 148.—WAGNER, Wiegmann's Archiv für Naturg., 1841, 100.—DENNY, Proc. Zool. Soc. Lond., 1847, 39.—BONAPARTE, Consp. Av., i, 1850, 114.—LEMBEYE, Aves de la Isla de Cuba, 1850, 131.—CABANIS, Journ. für Orn., 1856, 104 (habits).—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 307.—GUNDLACH, Repert. Fisico-Nat. Cuba, i, 1866, 295; Journ. für Orn., 1874, 155 (habits).—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 122.

[*Colaptes*] *fernandinae* LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 77.—BONAPARTE, Ateneo Italiano, ii, 1854, 126.—GUNDLACH, Journ. für Orn., 1861, 334.—GRAY, Hand-list, ii, 1870, 202, no. 8833.

[*Colaptes*] *fernandinae* REICHENBACH, Handb. Scansores, Picinæ, 1854, 415, pl. 667, fig. 4427.

[*Picus*] *fernandinae* WAGLER, Isis, 1829, 517.

*Geopicos fernandinae* MALHERBE, Mém. Acad. Metz, xxx, 1849, 359.

*Geopicus fernandinae* MALHERBE, Mon. Pictid., ii, 1862, 273; iv, 1862, pl. 113, figs. 4, 5.

[*Nesocoleus*] *fernandinae* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101.—CORY, List Birds West Ind., 1885, 20.—SHARPE, Hand-list, ii, 1900, 226.

*Nesocoleus fernandinae* CORY, Auk, iii, 1886, 380; Birds West Ind., 1889, 176; Cat. West Ind. Birds, 1892, 12, 104, 128.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 419.

*Nesocoleus fernandinae* GUNDLACH, Orn. Cubana, ed. 1895, 144.

*Picus fernandi* SUNDEVALL, Consp. Av. Picin., 1866, 78.

## Genus MELANERPES Swainson.

*Melanerpes* SWAINSON, Fauna Bor.-Am., ii, 1831, 316. (Type, by orig. design., *Picus erythrocephalus* Linnæus.)

*Melampicos* MALHERBE, Mém. Acad. Metz, xxx, 1849, 363. (Type, as fixed by Strickland, 1850, and Gray, 1855, *Picus erythrocephalus* Linnæus.)

*Melanopicos* (emendation) MALHERBE, Nouv. Classif. Picin., 1850, 46; see Strickland, in Jardine's Contr. Orn., 1850, 19.

*Melampicus* (emendation) MALHERBE, Mon. Pictid., ii, 1862, 192.

Medium-sized Pictidæ (wing 112–150 mm.), with outer hind toe shorter than anterior front toe, supranasal ridge distinct only on basal half of maxilla, plumage of throat and chest hair-like, crimson, that of breast either hair-like and crimson or else blended and white, and back glossy bluish or greenish black.

Bill about as long as head, rather stout, a little wider than deep at anterior end of nostrils (or about as wide in *M. erythrocephalus*); culmen slightly but distinctly convex, distinctly ridged; gonys nearly twice as long as mandibular rami (*M. erythrocephalus*) or about one and a half times as long (*M. portoricensis*), convex and prominent basally, straight and ascending terminally, distinctly ridged (at least terminally); supranasal ridge distinct for basal half or less of maxilla. Nostril partly covered by small antrorse bristly prefrontal plumes, rather large, broadly oval, situated about midway between culmen and tomium. Feathers of malar apex bristly, antrorse, those of chin with bristly semiantrorse tips. Wing rather long, the longest primaries exceeding secondaries by more than length of exposed cul-



men; sixth and seventh, or sixth, seventh, and eighth, primaries longest, ninth shorter than sixth (*M. portoricensis*) or seventh (*M. erythrocephalus*), the tenth (outermost) more than one-third as long as ninth (*M. portoricensis*) or less than one-third as long (*M. erythrocephalus*). Tail slightly more than half as long as wing (in *M. erythrocephalus*) to about three-fifths as long (*M. portoricensis*), the middle rectrices strongly acuminate terminally. Tarsus shorter than either outer toe with claw, rather slender; outer hind toe about as long as outer front toe, or very slightly shorter.

*Coloration*.—Adults with plumage of throat and chest hair-like, crimson; back, wing-coverts, primaries (secondaries also in *M. portoricensis*), and tail black; rump and upper tail-coverts white (secondaries and under parts of body, except chest, also white in *M. erythrocephalus*).

*Range*.—United States and southern Canada east of Rocky Mountains; one species peculiar to Porto Rico and St. Thomas, Greater Antilles. (Two species.)

#### KEY TO THE SPECIES OF MELANERPES.

- a. Secondaries and under parts mostly white; lateral rectrices tipped with white.
  - b. Head, neck, and chest uniform crimson; back uniform glossy blue-black; under parts of body immaculate white (sometimes tinged with red on abdomen); inner secondaries without black spots. (United States and southern Canada east of Rocky Mountains.).....*Melanerpes erythrocephalus*, adults (p. 42).
  - bb. Head, neck, and chest brownish gray or grayish brown streaked or spotted with dusky; back barred or squamated with grayish brown or brownish gray; under parts of body dull white streaked laterally with dusky; inner secondaries with a large subterminal spot of black.
    - Melanerpes erythrocephalus*, young (p. 44).
- aa. Secondaries wholly black (inner ones sometimes edged with white on distal portion); lateral rectrices not tipped with white.
  - b. Malar region, chin, throat, and median portion of remaining under parts crimson. (Porto Rico.).....*Melanerpes portoricensis*, adult male <sup>a</sup> (p. 47).
  - bb. Malar region, chin, and throat grayish brown; red on under parts of body more or less interrupted.
    - Melanerpes portoricensis*, adult female and young (p. 47).

#### MELANERPES ERYTHROCEPHALUS (Linnæus).

##### RED-HEADED WOODPECKER.

*Adults (sexes alike* <sup>b</sup>).—Head, neck, and upper chest uniform bright crimson, margined posteriorly by a more or less distinct (usually more or less concealed) semicircular band of black across chest; back and scapulars uniform glossy blue-black, the wing-

<sup>a</sup> Some adult females also.

<sup>b</sup> After carefully examining a very large number of sexed specimens I have been unable to find any average (much less constant) difference of coloration between the sexes.



coverts black margined with glossy blue-black; primary coverts, primaries, and tail uniform black, the latter (except two to four middle rectrices) tipped with white, the lateral pair sometimes edged with white; rump, upper tail-coverts, secondaries, and under wing-coverts (except along margin of wing) uniform pure white, the secondaries with shafts and basal portion (mostly concealed) black; under parts, posterior to upper chest, white, the abdomen more or less tinged with dull yellowish or salmon color, sometimes with bright red; bill grayish horn color, darker terminally, in dried skins, bluish white basally, passing into bluish gray or lead color terminally in life; iris deep brown or reddish brown; legs and feet dusky in dried skins, light greenish gray in life.

*Adult male*.—Length (skins), 194–235 (221); wing, 128–149.5 (139.5); tail, 70–81 (75.3); culmen, 25–29 (27.3); tarsus, 21.5–24.5 (23); outer anterior toe, 16–19 (17.6).<sup>a</sup>

*Adult female*.—Length (skins), 202–223 (213); wing, 127.5–144 (136.5); tail, 66–84.5 (74.1); culmen, 25–30 (26.6); tarsus, 20.5–24 (21.9); outer anterior toe, 16.5–19 (17.5).<sup>b</sup>

<sup>a</sup> Thirty-two specimens.

<sup>b</sup> Twenty-one specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from east of Allegheny Mountains.....	138	73.2	26.3	22.6	17.4
Ten adult males from Mississippi Valley (east of Missouri River).....	136	75.9	28.3	23	17.2
Ten adult males from west of Missouri River.....	145.6	77.1	27.3	23.5	18.2
Two adult males from Florida.....	134	74	26	23	16.8
FEMALES.					
Five adult females from east of Allegheny Mountains.....	135.6	74.5	25.4	21.7	17.4
Eight adult females from Mississippi Valley (east of Missouri River).....	134.6	73.7	26.4	21.6	16.9
Six adult females from west of Missouri River.....	142.6	76.1	27.8	22.2	18.4
One adult female from Mississippi.....	131	71	27.5	21	16.5
One adult female from Florida.....	125	67	26	23	18

Were it not for the fact that specimens from the Mississippi Valley agree with them in coloration but average even smaller than those from the Atlantic States, the specimens of this species from the region of the Great Plains and Rocky Mountains could easily be separated as a well-defined subspecies on account of their decidedly greater size and frequency of red on the abdomen. As already stated, however, Mississippi Valley specimens also usually have the abdomen more or less strongly tinged with red (a feature wanting in every one of the Atlantic coast specimens examined) but average even smaller (though very slightly so) than extreme eastern specimens. Florida examples are small, but the only two males examined from that State both exceed in length of wing an adult male from Richland County, Illinois, these measuring 133 and 135 mm., respectively, in the two Florida males, and 128, 134, and 134 in three adult males from Richland County, another from Knox County, Indiana, having the wing 134.5.

*Young*.—Very different from adults: Head, neck, and upper chest brownish gray to grayish brown, more or less dark, streaked or spotted with black, sometimes suffused or intermixed with red on hindneck or on sides of head; back, scapulars, and wing-coverts black, the feathers more or less broadly margined with pale gray or brownish gray; secondaries white with one or two broad bands of black (sometimes more or less interrupted) on distal portion; under parts, posterior to chest, dull white to very pale brownish gray or grayish brown, the sides and flanks (especially the latter), sometimes also the breast, more or less distinctly streaked with dusky; otherwise much as in adults.

Transition and austral zones from southeastern British Columbia, Wyoming, Colorado, and Texas, east to the Atlantic coast; north, regularly, to northern New York (breeding in Adirondack region), Ontario (as far as Muskoka and Parry Sound), Manitoba (Big Plain; Red River Valley; Fort Dufferin; Winnipeg, accidental), central Alberta, and southwestern Saskatchewan (rare), south to southern Florida and Gulf coast to Refugio and Bee counties, Texas; rare and local east of the Hudson River, where breeding, however, north to Vermont (Rutland); casual in Nova Scotia (Ketch Harbor), New Brunswick, Utah (near Salt Lake City), New Mexico, and Arizona; irregularly migratory in northern parts of its range.

- [*Picus*] *erythrocephalus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 113 (based on *Red-headed Woodpecker* Catesby, Nat. Hist. Carolina, i, 20, pl. 20; *Le Pic à tête rouge de Virginie* Brisson, Orn., iv, 53, pl. 3, fig. 3); ed. 12, i, 1766, 174.—GMELIN, Syst. Nat., i, pt. i, 1788, 429.—LATHAM, Index Orn., i, 1790, 227.
- Picus erythrocephalus* TEMMINCK, Cat. Syst., 1807, 62.—VIEILLOT, Ois. Am. Sept., ii, 1807, 60, pls. 112, 113; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 85.—WILSON, Am. Orn., i, 1808, 142, pl. 9, fig. 1.—BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1317.—VALENCIENNES, Dict. Sci. Nat., xl, 1826, 181.—DRAPIEZ, Dict. Class., xiii, 1828, 496.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 45.—LESSON, Traité d'Orn., 1831, 227.—AUDUBON, Orn. Biog., i, 1831, 141, pl. 27; v, 1839, 536; Synopsis, 1839, 184; Birds Am., oct. ed., iv, 1842, 274, pl. 271.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 569, 2d ed., 1840, 674.—HAHN and KÜSTER, Orn. Atlas, 1834, pl. 2.—PUTNAM, Proc. Essex Inst., i, 1856, 214 (Massachusetts).—SUNDEVALL, Consp. Av. Picin., 1866, 50.—TRIPPE, Proc. Essex Inst., vi, 1871, 118 (Minnesota).
- P[icus] erythrocephalus* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 369; Obs. Wils. Am. Orn., 1826, [29].—WAGLER, Syst. Av., 1827, *Picus*, sp. 14; Isis, 1829, 518.—MAXIMILIAN, Journ. für Orn., 1858, 419.
- Melanerpes erythrocephalus* SWAINSON, Fauna Bor.-Am., ii, 1831, pp. xxvi, 316; Classif. Birds, ii, 1837, 310.—BONAPARTE, Comp. and Geog. List, 1838, 39.—GAMBEL, Journ. Ac. Nat. Sci. Phila., i, 1847, 55 (Mission San Gabriel, California, "numbers").—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 113; Cat. N. Am. Birds, 1859, no. 94; in Cooper, Orn. Calif., 1870, 402 (as to alleged record by Gambel for San Gabriel, California).—HENRY, Proc. Ac. Nat.

Sci. Phila., 1859, 105 (Rio Grande, New Mexico, 1 spec., July).—VERRILL, Proc. Essex Inst., iii, 1862, 145 (Oxford Co., Maine, rare summer resident).—SCLATER, Cat. Am. Birds, 1862, 340 (e. North America).—DRESSER, Ibis, 1865, 469 (Nueces, Guadalupe, Colorado, Brazos, and Medina rivers, Texas).—McILWRAITH, Proc. Essex Inst., v, 1866, 83 (Hamilton, Ontario).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 291 (vicinity of New York City).—GRAY, List Birds Brit. Mus., Pictidae, 1868, 115.—COOPER, Orn. Calif., 1870, 402.—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 129 (Leavenworth and Topeka, Kansas), 139 (Ft. Hays, Kansas), 151 (Denver and Plum Creek, Colorado), 158 (South Park, Colorado); Proc. Bost. Soc. N. H., xvii, 1874, 63 (Missouri R. to Mussel-shell R., abundant); Bull. Am. Mus. N. H., i, 1886, 247 (Massachusetts, rare summer resident).—HOLDEN, Proc. Bost. Soc. N. H., xv, 1872, 207 (near Sherman, Wyoming).—TRIPPE, Proc. Bost. Soc. N. H., xv, 1872, 233 (Decatur and Mahaska counties, Iowa, breeding).—RIDGWAY, Bull. Essex Inst., v, 1873, 173 (Salt Lake City, Utah, 1 spec., May), 177, 185 (Colorado); vii, 1875, 31 (Salt Lake City); Field and Forest, i, 1877, 209 (Colorado); Orn. 40th Parallel, 1877, 554 (Salt Lake City; Laramie, Wyoming); Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 375; Bull. Nutt. Orn. Club, vi, 1881, 120 (unusual migration in s. Illinois in fall of 1879); Orn. Illinois, i, 1889, 383.—COUES, Check List, 1873, no. 309; 2d ed., 1882, no. 453; Birds Northwest, 1874, 290 (Nehama R.; Yellowstone R.; Platte R.; Ft. Lookout; Bitter Cottonwood and La Bonte creeks, Colorado, etc.); Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 617 (Pembina R., North Dakota, to Rocky Mts.).—BAIRD, BREWSTER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 564, pl. 54, fig. 4; special ed., 1875, plate facing p. 564.—FERNALD, Am. Nat., viii, 1874, 437 (Orono, Maine, accidental).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 90 (South Park and Huerfano R., Colorado); Zool. Exp. W. 100th Merid., 1875, 398 (South Park, Pueblo, Twin Lakes, and El Paso County, Colorado).—GENTRY, Proc. Ac. Nat. Sci. Phila., 1874, 109 (habits).—BREWSTER, Ann. Lyc. N. Y., xi, 1875, 144 (Ritchie Co., West Virginia).—GRINNELL (G. B.), in Ludlow's Rep. Recon., 1876, 81 (Montana).—McCAULEY, Rep. U. S. Geol. and Geog. Surv. Terr., iii, 1877, 679 (Red R. Valley, Texas; crit.).—BAILEY (H. B.), Bull. Nutt. Orn. Club, iii, 1878, 97 (Vermilion, South Dakota; habits).—MAYNARD, Birds Florida, 1878, 229.—MERRIAM, Bull. Nutt. Orn. Club, iii, 1878, 123 (Lewis Co., New York, resident; habits); vi, 1881, 232 (Adirondack region, breeding).—RATHBUN (F. R.), Rev. List Birds Centr. New York, 1879, 25 (resident).—COUES (G. H.), Bull. Nutt. Orn. Club, iv, 1879, 31 (Brooklyn, New York, summer resident).—ROBERTS, 8th An. Rep. Geol. and Nat. Hist. Surv. Minn., 1880, 163 (Duluth, 1 spec., July 11, 1877); in Wilcox's Hist. Becker Co., Minn., 1907, 176 (common).—AGERSBERG, Bull. Nutt. Orn. Club, vi, 1881, 120 (Vermilion, South Dakota; peculiar nesting site).—BROWN (N. C.), Proc. Portland Soc. N. H., 1882, (19) (Portland, Maine, rare and irregular).—OGLBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 59 (Navarro Co., Texas, uncommon in summer).—PURDIE, Bull. Nutt. Orn. Club, vii, 1882, 57 (near Boston, Massachusetts, Sept., Oct., and Nov., 1881).—WILLIAMS, Bull. Nutt. Orn. Club, vii, 1882, 63 (Belt Mts., Montana, 1 spec.).—KNOWLTON, Bull. Nutt. Orn. Club, vii, 1882, 63 (Orwell, Brandon, Rutland, etc., Vermont, common).—NEHRLING, Bull. Nutt. Orn. Club., vii, 1882, 171 (Houston, etc., s. e. Texas, breeding).—ALLEN and BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 196 (Colorado Springs, Colorado).—DREW, Auk, ii, 1885, 17 (Colorado, breeding from plains up to 10,000 ft.).—BECKHAM, Auk, ii, 1885, 143 (Pueblo, Colorado);



- Proc. U. S. Nat. Mus., x, 1888, 664 (San Antonio, Texas, Jan., Feb.).—BICKNELL, Auk, ii, 1885, 259 (notes).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 406; 3d ed., 1910, 192.—SETON, Auk, iii, 1886, 156 (Big Plain and Red R. Valley, w. Manitoba, summer resident).—LOYD, Auk, iv, 1887, 191 (Kickapoo Co., w. Texas).—SCOTT, Auk, vi, 1889, 251 (7 miles n. of Tarpon Springs, Florida).—HASBROUCK, Auk, vi, 1889, 238 (Eastland Co., etc., Texas, abundant).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 145 (Ft. Dufferin, Manitoba; Pembina, North Dakota; Miami, Florida; Papalote, Bee Co., Texas; "Mexico;" etc.).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 551 (Winnipeg, etc., Manitoba, rare in summer).—RALPH and BAGG, Auk, vii, 1890, 231 (Remsen, Oneida Co., New York, Dec.).—GRUNDTVIG, Trans. Mich. Ac. Sci., etc., 1894, 114 (Shiocton, Wisconsin, breeding).—SINGLEY, Rep. Geol. Surv. Texas, 1894, 350 (Lee Co., Texas, resident).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 107.—THORNE, Auk, xii, 1895, 215 (Ft. Keogh, Montana, breeding).—PIERS, Trans. Nova Scotia Inst. Sci., 2d ser., i, 1895, 405 (Ketch Harbor, Nova Scotia, 1 spec.).—BRACKETT, Auk, xiii, 1896, 258 (Boston, Massachusetts, March, May).—HOLSTEIN, Auk, xvi, 1899, 353 (drumming habit).—FAXON and HOFFMANN, Birds Berkshire Co., Mass., 1900, 36 (rare summer resident).—BEYER, Proc. Louisiana Soc. Nat. for 1897-99 (1900), 103 (Louisiana, resident).—CARROLL, Auk, xvii, 1900, 344 (Refugio Co., Texas, 1 spec., Nov.).—FLEMING, Auk, xviii, 1901, 39 (Parry Sound and Muskoka, n. Ontario, rare).—CARY, Auk, xviii, 1901, 234 (Black Hills, Wyoming).—TORREY, Auk, xviii, 1901, 394 (near Boston, Massachusetts, breeding).—HOWE, Contr. Am. Orn., ii, 1902, 15 (Vermont; rare straggler, but said to breed at Rutland).—CURRIER, Auk, xxi, 1904, 36 (Leech Lake, Minnesota, rare).—SWALES, Auk, xxii, 1905, 80 (Detroit, Michigan, wintering in large numbers).—JONES, Wilson Bull., no. 57, 1906, 116 (Cleveland, Ohio, com. sum. res.).—HALL, Wilson Bull., no. 57, 1906, 125 (w. Adirondacks, rare).—SHERMAN, Wilson Bull., no. 59, 1907, 72 (provident habits).—TAVERNER and SWALES, Wilson Bull., no. 61, 1907, 133 (Point Pelee, Ontario, com. in May).—WOODRUFFE, Bull. vi, Chicago Ac. Sci., 1907, 111 (Chicago area, common summer resident).—WARREN (E. R.), Condor, x, 1908, 21 (Grand Co., n. w. Colorado, 1 spec., June); xii, 1910, 32 (Glendale, Pueblo, and Fountain Creek, Colorado).—BENT, Auk, xxv, 1908, 26 (s. w. Saskatchewan, rare).—HERSEY and ROCKWELL, Condor, xi, 1909, 118 (Bear Lake district, Colorado, common summer resident).—HENDERSON, Univ. Colo. Stud. Zool., vi, 1909, 231 (plains and lower mts., Colorado, common summer resident).—CHANEY, Auk, xxvii, 1910, 274 (Mason Co., Michigan; a few pairs).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 35, pl. 3 (food).—TOWNSEND (C. W.), Auk, xxix, 1912, 20 (Beaverdam, York Co., New Brunswick, June 1, 1911).
- [*Melanerpes*] *erythrocephalus* BONAPARTE, Consp. Av., i, 1850, 115; Ateneo Italiano, ii, 1854, 125.—GRAY, Hand-list, ii, 1870, 201, no. 8814.—COUES, Key N. Am. Birds, 1872, 196.—SHARPE, Hand-list, ii, 1900, 209.
- M[*elanerpes*] *erythrocephalus* GRAY, Gen. Birds, ii, 1846, 444.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 381, pl. 642, figs. 4284-4286.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 378 (Illinois).—NELSON, Bull. Essex Inst., viii, 1876, 116, 153 (n. e. Illinois, resident).—COUES, Key N. Am. Birds, 2d ed. 1884, 489.—RIDGWAY, Man. N. Am. Birds, 1887, 290.
- Melampicos erythrocephalus* MALHERBE, Mém. Ac. Metz, xxx, 1849, 365.
- Melampus erythrocephalus* MALHERBE, Mon. Piced., ii, 1862, 209; iv, 1862, pl. 97, figs. 1, 2, 3.
- Melanerpes erythrocephalus* WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 91 (Indian Territory; Texas).

*Melanerpes erythrocephalous* NASH, Vertebr. Ontario, 1908, Birds, p. 51 (summer resident).

[*Picus*] *obscurus* GMELIN, Syst. Nat., i, pt. i, 1788, 429 (Long Island, New York; based on *White-rumped Woodpecker* Latham, Synopsis, i, pt. 2, 563).—LATHAM, Index Orn., i, 1790, 228.

### MELANERPES PORTORICENSIS (Daudin.)

#### PORTO RICAN WOODPECKER.

*Adult male*.—Forehead and lores dull white; rump and upper tail-coverts pure white; rest of upper parts uniform glossy blue-black, the tail and remiges less bluish; malar region, throat and median portion of lower surface back to anal region glossy crimson, more or less interrupted on foreneck, where the red of the throat is sometimes quite separated from that of the chest by a band (more or less broad) of glossy blue-black; sides, flanks, and under tail-coverts light grayish brown (nearly broccoli brown), the last usually paler (sometimes almost dull whitish); under wing-coverts white, those along edge of wing (broadly) uniform glossy blue-black; inner webs of remiges uniform black; under surface of tail grayish black; bill black; legs and feet dusky (in dried skins); length (skins), 196–230 (213); wing, 119–128.5 (123.4); tail, 71–80.5 (76.4); culmen, 27–29 (27.9); tarsus, 21–24 (22.4); outer anterior toe, 17.5–20 (18.8).<sup>a</sup>

*Adult female*.—Similar to the adult male and not always distinguishable, but usually with chin and throat light grayish brown or brownish gray (sometimes tinged or intermixed with red), red on under parts of body rather less extensive, white of lores nearly surrounding eyes, and secondaries (at least the inner ones) edged distally with white; length (skins), 185–213 (195); wing, 112–119 (116.4); tail, 66–74 (71.3); culmen, 21–24 (22.6); tarsus, 19–20.5 (19.8); outer anterior toe, 17–18.5 (17.4).<sup>a</sup>

*Young male*.—Essentially like adult male but red of under parts duller, less extensive, gray of sides and flanks darker, and texture of plumage much softer. (Sometimes with feathers of crown tipped with dull red.)

*Young female*.—Similar to the adult female, but under parts with the gray darker, the red duller and more restricted, and texture of plumage softer.

Islands of Porto Rico (El Yunque; Caguas; Utuado; Mayagüez; Aguadilla; Catánia; Lares; Huacares), Viéques, and St. Thomas.<sup>b</sup>

*Picus portoricensis* DAUDIN, Ann. Mus. d'Hist. Nat., ii, 1803, 286, pl. 51.—SUNDEVAL, Consp. Av. Picin., 1866, 50; Öfv. K. Vet. Akad. Förh., 1869, 599.—BRYANT, Proc. Bost. Soc. N. H., x, 1866, 256; Journ. für Orn., 1866, 190.

*Melanerpes portoricensis* VALENCIENNES, Dict. Sci. Nat., xl, 1826, 172.—DRAPIEZ, Dict. Class., xiii, 1828, 505.—NEWTON (A. and E.), Ibis, 1859, 377.—CASSIN,

<sup>a</sup> Ten specimens from Porto Rico.

<sup>b</sup> I have not been able to compare specimens from St. Thomas with those from Porto Rico.

- Proc. Ac. Nat. Sci. Phila., 1860, 377 (St. Thomas).—SCLATER, Cat. Am. Birds, 1862, 341 (Viéques I., near Porto Rico).—TAYLOR, Ibis, 1864, 170.—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 115.—GUNDLACH, Journ. für Orn., 1874, 312; 1878, 160, 183 (habits; descr. nest and eggs); Anal. Soc. Esp. Hist. Nat., vii, 1878, 227.—CORY, Auk, iii, 1886, 377; Birds West Ind., 1889, 172; Cat. W. I. Birds, 1892, 12, 104, 132.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 159 (Porto Rico and Vieques I.).—BOWDISH, Auk, xix, 1902, 365 (habits); xx, 1903, 194 (food).
- [*Melanerpes*] *portoricensis* GRAY, Hand-list, ii, 1870, 201, no. 8819.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.—CORY, List. Birds West Ind., 1885, 20.—SHARPE, Hand-list, ii, 1900, 210.
- Melampicus porto-ricensis* MALHERBE, Mon. Pictid., ii, 1862, 205; iv, 1862, pl. 97, fig. 5.
- Picus rubidicollis* VIEILLOT, Ois. Am. Sept., ii, 1807, 63, pl. 117; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 75.—SHAW, Gen. Zool., ix, 1815, 156.
- [*Picus*] *rubidicollis* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1321.—WAGLER, Syst. Av., 1827, *Picus*, sp. 62.—DRAPIER, Dict. Class., xiii, 1828, 499.
- [*Melanerpes*] *rubidicollis* GRAY, Gen. Birds, ii, 1846, 444.—REICHENBACH, Handb. Scans. Pictinæ, 1854, 383, pl. 643, figs. 4289-90.
- [*Melanerpes*] *rubidicollis* BONAPARTE, Consp. Av., i, 1850, 115; Ateneo Italiano, ii, 1854, 125.—LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 76.
- Picus carolinus* (not of Linnæus) LESSON, Traité d'Orn., i, 1831, 227.

#### Genus CENTURUS Swainson.

- Centurus* SWAINSON, Classif. Birds, ii, 1837, 310. (Type, by monotypy, *Picus carolinus* Linnæus.)
- Zebrapicus* MALHERBE, Mém. Acad. Metz., xxx, 1849, 360. (Type, *Picus carolinus* Linnæus.)

Rather large to small Pictidæ (wing 95-158 mm.) resembling *Melanerpes* in form but with relatively longer tail (about two-thirds as long as wing instead of half to three-fifths as long), plumage of throat and chest always soft and blended and never red, and with back and wings (except primaries), sometimes rump, upper tail-coverts and tail also, conspicuously barred with white and black.

Bill slightly shorter to decidedly longer than head, its length from nostril usually about as long as tarsus (decidedly greater only in *C. superciliaris* and related species and *C. radiolatus*), usually more slender than in *Melanerpes*; culmen very faintly to rather distinctly convex, distinctly though not sharply ridged; gonys much longer than mandibular rami, nearly straight, ascending terminally, more or less prominent basally, not distinctly ridged (except, sometimes, terminally); supranasal ridge sometimes distinct for basal half (more or less) of maxilla, sometimes nearly obsolete. Nostril broadly oval, situated about midway between culmen and tomium, more or less covered by small, antrorse, prefrontal plumes; feathers of malar apex antrorse, bristly-tipped, those of chin with semiantrorse



bristly tips. Orbital region more or less naked (extensively and completely so in *C. chrysogenys*, much less so in *C. carolinus*, *C. aurifrons*, *C. santacruzi*, *C. dubius*, *C. polygrammus*, *C. hoffmanni*, very little so in *C. uropygialis* and *C. hypopolius*). Wing rather long, the longest primaries exceeding secondaries by about one-fourth the length of wing, except in *C. radiolatus*, *C. striatus*, and *C. chrysogenys*, in which the difference equals about one-fifth the length of wing; sixth and seventh or sixth, seventh, and eighth primaries longest (fifth, sixth, and seventh longest in *C. striatus*), ninth usually shorter than fourth (nearly or quite equal to fifth in *C. hypopolius*, about equal to third in *C. chrysogenys*, *C. radiolatus*, and *C. striatus*), the tenth more than one-third as long as ninth in *C. superciliaris* and allied forms, *C. uropygialis*, *C. chrysogenys*, *C. radiolatus*, and *C. striatus*. Tail usually a little less than two-thirds as long as wing, quite two-thirds as long in *C. superciliaris* and allied forms, *C. chrysogenys*, and *C. striatus*, much less than two-thirds (scarcely half) as long in *C. wagleri*, the middle rectrices narrowly and rather abruptly acuminate terminally (except in *C. striatus*). Tarsus usually shorter than hind toe with claw (about as long in *C. striatus*, *C. chrysogenys*, *C. uropygialis*, and *C. hypopolius*); outer hind toe slightly but distinctly shorter than outer anterior toe, except in *C. striatus*, *C. uropygialis*, and *C. hypopolius*.

*Coloration*.—Upper parts conspicuously barred with black and white or black and yellowish; under parts plain grayish, brownish, or yellowish, usually more or less barred posteriorly, the abdomen usually reddish or yellowish; adult males with more or less of red on pileum (whole pileum and hindneck sometimes red); no red on throat nor chest.

*Range*.—Continental Tropical America, south to the Guianas, Venezuela, Tobago, Trinidad, and Colombia, southern portion of Nearctic Region, and Greater Antilles (Bahamas, Cuba, Grand Cayman, Haiti, and Jamaica). (About twenty-five species and subspecies.<sup>a</sup>)

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<sup>a</sup> The ideal classification would probably require a subdivision of this genus, in which (as here considered) there are considerable structural differences in the several species. For example, in addition to variations of the wing-formula, relative length of wing and tail, relative length of toes, etc., there are other characters which, carefully studied, may result in a satisfactory definition of additional groups. The feet are relatively very large and strong in *C. superciliaris* and *C. radiolatus*, as compared with the relatively small and weak, or slender, ones of *C. uropygialis* and *C. hypopolius*; but the fact that unquestionably close relatives of the former, the several Bahaman forms, have the feet intermediate in this respect invalidates this character as a basis for subdivision.

## KEY TO THE SPECIES AND SUBSPECIES OF CENTURUS.

- a. Rump and upper tail-coverts without red.
- b. Rump and upper tail-coverts white, with or without black bars or other markings.
- c. Hindneck red, orange, or yellow.
- d. Abdomen red or pink.
- e. Prefrontal region red or pink; larger (wing 122-157.5 mm.).
- f. Middle rectrices with much white; inner webs of primaries with large spots or blotches of white on proximal half.
- g. Forehead light red (male) or gray (female); upper tail-coverts not distinctly, if at all, barred; abdomen pale red. (Eastern United States.)  
**Centurus carolinus** (p. 55).
- gg. Forehead white, or, sometimes, pale brownish gray (both sexes); upper tail-coverts conspicuously barred with black.
- h. A conspicuous superciliary spot of black (females with black on occiput also).
- i. Black superciliary spot larger; under parts more yellowish; size larger (wing averaging more than 138, tail more than 94, culmen more than 38 in males, wing averaging more than 135, tail more than 92, culmen more than 34, in females). (*Centurus superciliaris*.)
- j. Larger (averaging: wing 147.3, tail 99.5, culmen 39.8, tarsus 25.9, outer anterior toe 22.6, in male; 144.5, 98.7, 35.5, 25.1, 21.7 in female); general color of under parts darker and more yellowish. (Cuba, except Isle of Pines.)  
**Centurus superciliaris superciliaris** (p. 59).
- jj. Smaller (averaging: wing 138.4, tail 94.5, culmen 38.2, tarsus 24.4, outer anterior toe 20.8, in male; 135.5, 92.5, 34.5, 24.5, 19.8 in female); general color of under parts paler and less yellowish. (Isle of Pines, Cuba.)  
**Centurus superciliaris murceus** (p. 61).
- ii. Black superciliary spot smaller; under parts more grayish; smaller (wing averaging less than 134, tail less than 92, culmen less than 33, in males; wing averaging less than 130, tail less than 92, culmen less than 29, in females). (*Centurus blakei*.)
- j. White bars of dorsal region and general color of under parts less strongly tinged with yellowish; forehead more purely white in male, dull white in female. (Island of Abaco, Bahamas.)  
**Centurus blakei blakei** (p. 61).
- jj. White bars on dorsal region and general color of under parts more strongly tinged with yellowish; forehead duller white in male, pale smoky brownish in female. (Great Bahama Island, Bahamas.) ..... **Centurus blakei bahamensis** (p. 63).
- hh. No superciliary spot of black; females with little if any black on occiput.
- i. Black bars on upper parts much broader, the white areas less strongly tinged with yellowish, this mostly on back; a few small streaks of black on supra-postocular region; adult male averaging: wing 129.5, tail 88.9, culmen 32.9, tarsus 23.1, outer anterior toe 20; adult female averaging: wing 129.3, tail 91.3, culmen 28.2, tarsus 21.7, outer anterior toe 18.2. (Watling Island, Bahamas.) ..... **Centurus nyeanus** (p. 63).

- ii. Black bars on upper parts much narrower, the lighter areas mostly buff-yellowish; no trace of black streaks on supra-postocular region; adult male averaging: wing 127.8, tail 87, culmen 33.6, tarsus 23.5, outer anterior toe 20.2; adult female averaging: wing 123.8, tail 85.8, culmen 30.4, tarsus 22.3, outer anterior toe 19.2. (Island of Grand Cayman, south of Cuba.)

***Centurus caymanensis* (p. 65).**

- ff. Middle rectrices with little (mostly concealed) white or none; inner web of primaries regularly barred with white basally. (*Centurus dubius*.)
- g. White bars on back, etc., much narrower than black interspaces; outer webs of primaries without distinct if any white markings on basal portion; smaller (adult female with wing averaging less than 128 mm.).
- h. Coloration much lighter, the general color of under parts pale yellowish gray (dull whitish in faded specimens), the rump and upper tail-coverts immaculate white, the adult male with white frontal band broader.
- i. Averaging slightly larger (wing averaging 133.3 in adult male, 127.2 in adult female); white bars on back, etc., narrower (or black bars relatively broader), general color of under parts paler and less yellowish, red of abdomen deeper and more extended, and middle rectrices always (?) wholly black. (Yucatan, Campeche, and British Honduras.)

***Centurus dubius dubius* (p. 66).**

- ii. Averaging slightly smaller (wing averaging 126.9 in adult male, 124.7 in adult female); white bars on back, etc., wider (or black bars relatively narrower); general color of under parts darker and more yellowish; red of abdomen paler and more restricted (frequently tinged with orange), and adult female sometimes with inner web of middle rectrices marked with white on basal portion. (Vera Cruz, eastern Oaxaca, Tabasco, Chiapas, and Guatemala.<sup>a</sup>).....***Centurus dubius veræcrucis* (p. 68).**
- hh. Coloration much darker, the general color of under parts yellowish broccoli brown (in unfaded specimens), the rump and upper tail-coverts more or less (often heavily) barred with black, the adult male with white frontal band narrower (sometimes obsolete). (Island of Cozumel, Yucatan.)

***Centurus dubius leei* (p. 69).**

- gg. White bars on back, etc., nearly as wide as the black interspaces; outer webs of primaries (except three outermost) spotted or barred with white on basal portion; larger (adult female with wing averaging 130.3 mm.). (Island of Ruatan, Honduras.)

***Centurus dubius canescens* (p. 70).**

- ee. Prefrontal region yellow; smaller (wing 95-119.5).
- f. Back, etc., more narrowly barred (white bars about 1-1.5 mm. wide); lateral rectrices without whitish bars; tail longer (57.5-69 mm.). (*Centurus rubriventris*.)
- g. Larger and paler, and with less white on middle rectrices; adult male usually with red of crown more extensive and broadly confluent with that on nape; adult male averaging: wing 107, tail 63, culmen 21.6; adult female averaging: wing 105.5, tail 62.3, culmen 19.1. (Yucatan.).....***Centurus rubriventris rubriventris* (p. 70).**

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<sup>a</sup> Typical specimens from Vera Cruz and Oaxaca only.



- gg. Smaller and darker, with more white on middle rectrices; adult male with red of crown usually more restricted and separated from that of nape by a more or less complete band of olive-gray; adult male averaging: wing 98, tail 60.3, culmen 21; adult female averaging: wing 96.7, tail 58.8, culmen 19.5. (Island of Oozumel, Yucatan.).....***Centurus rubriventris pygmæus*** (p. 72).
- ff. Back, etc., more broadly barred (white bars about 2 mm. wide); lateral rectrices with broad whitish bars on distal portion; tail shorter (44.5–56.5 mm.). (*Centurus subelegans*.)
- g. Black bars on back, etc., averaging broader; adult male usually with red of crown separated from that of nape by a more or less complete occipital band of buffy grayish or light yellowish olive. (British Guiana, Venezuela, Trinidad, and Tobago.)
- Centurus subelegans subelegans*** (extralimital).<sup>a</sup>
- gg. Black bars on back, etc., averaging narrower; adult male with red of crown usually broadly confluent with that of nape (except in *C. s. neglectus*?).
- h. Under parts paler; averaging smaller (adult female <sup>b</sup> averaging: Wing, 102; tail, 47; culmen, 19; tarsus, 16.8; outer anterior toe, 14.5). (Bogotá district, central Colombia.)
- Centurus subelegans neglectus*** (extralimital).<sup>c</sup>
- hh. Under parts darker; averaging larger (adult females averaging: wing more than 102, tail more than 48, culmen more than 20, tarsus more than 17.5, outer anterior toe more than 16).
- i. Black bars on back, etc., as well as those on middle rectrices narrower; prefrontal region distinctly yellow; general color of under parts more yellowish; red of abdomen more restricted; wing longer, bill shorter.

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<sup>a</sup> *Centurus subelegans* Bonaparte, Proc. Zool. Soc. Lond., 1837, 109 ("Mexico," i. e., Venezuela; see Bonaparte, Consp. Av., i, 1850, 119, and Richmond, Proc. U. S. Nat. Mus., xviii, 1896, 666).—*Melanerpes subelegans* Richmond, Proc. U. S. Nat. Mus., xviii, Aug. 12, 1896, 666 (Margarita I., Venezuela; crit.).—*Melanerpes tricolor* (ex *Picus tricolor* Wagler, 1829, not of Gmelin, 1788) Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 174, part.—*Melanerpes wagleri* Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1895, 416, part (Venezuela).

I am not able to satisfactorily distinguish specimens from Trinidad and Tobago from Venezuelan examples. One of the latter (from Mérida) has the red of the head broadly continuous from crown to nape, and is very little different in this and other characters from Santa Marta specimens (*Melanerpes wagleri sanctæ-martæ* Bangs).

Specimens with barred rump and upper tail-coverts (= *Centurus terricolor* Berlepsch) have not been seen by me.

<sup>b</sup> I have seen only one adult male of this form, its measurements being as follows: Wing, 109; tail, 49.5; culmen, 22; tarsus, 17.5; outer anterior toe, 15.5, thus agreeing, except in length of wing, in small size with females from Bogota. This single male, however, has an imperfect grayish occipital band, as in most specimens of *C. s. subelegans* from Venezuela, etc.

<sup>c</sup> *Melanerpes subelegans neglectus* Richmond, Proc. U. S. Nat. Mus., xviii, no. 1093, Aug. 12, 1896, 668 (Bogotá, Colombia; coll. U. S. Nat. Mus.).

Of this form, whose status is somewhat doubtful, I have seen only one adult male and three adult females.

- j. Black bars or spots on inner web of middle rectrices smaller, usually not touching shaft (sometimes reduced to small irregular spots). (Santa Marta district, northeastern Colombia.).....**Centurus subelegans sanctæ-martæ** (extralimital).<sup>a</sup>
- jj. Black spots or bars on inner web of middle rectrices larger, usually touching shaft. (Panama and Costa Rica.)

**Centurus subelegans wagleri** (p. 73).

- ii. Black bars on back, etc., also those on middle rectrices, broader; prefrontal region orange-pinkish; general color of under parts more vinaceous; red of abdomen more extensive; wing shorter, bill larger. (San Miguel Island, Bay of Panama.)

**Centurus seductus** (p. 75).

dd. Abdomen yellow or orange-yellow.

e. No black on side of head.

f. Tail shorter (53–61.5 mm.); wing 112–125.5 mm. (Nicaragua and Costa Rica.).....**Centurus hoffmannii** (p. 76).

ff. Tail longer (63–85 mm.); wing 117.5–144 mm.

g. Middle rectrices with much white on inner web, the outer web also with more or less white. (*Centurus polygrammus*.)

h. Larger (averaging wing 138.9, tail 80.5, culmen 31 in male, wing 133.1, tail 76.1, culmen 27.2, in female); white bars on back, etc., narrower (averaging about 1.5 mm. wide); rump and upper tail-coverts usually immaculate white; yellow of abdomen deeper and more extended; adult male with red crown-spot frequently confluent with orange-red of nape. (Oaxaca and adjacent portion of Chiapas.)

**Centurus polygrammus polygrammus** (p. 78).

hh. Smaller (averaging wing 133.6, tail 74.4, culmen 29.2, in male, wing 130.6, tail 72.6, culmen 26.1, in female); white bars on back, etc., broader (averaging about 2 mm. wide); rump and upper tail-coverts always conspicuously barred with black, yellow of abdomen paler and more restricted; adult male with red crown-spot always (?) separated from orange or orange-yellow nuchal area by an occipital band of gray. (Southeastern Chiapas.).....**Centurus polygrammus frontalis** (p. 80).

gg. Middle rectrices with little if any white (the outer web with none).

h. Back broadly barred with white (the bars averaging about 2 mm. wide); primaries with much white on basal portion; under wing-coverts mostly white; under parts much paler (pale buffy grayish), the yellow of abdomen paler; middle rectrices always wholly black; nape yellow to orange, the adult male with red crown-patch usually separated from color of nape by a gray occipital band. (Texas and northern and middle Mexico, south to States of Tamaulipas, Hidalgo, Guanajuato, Michoacán, and Jalisco.).....**Centurus aurifrons** (p. 81).

<sup>a</sup> (?) *Centurus rubricapillus* Cabanis, Journ. für Orn., x, Sept., 1862, 328 (Barranquilla, Colombia; coll. Heine Mus.).—*Melanerpes wagleri sanctæ-martæ* Bangs, Proc. Biol. Soc. Wash., xii, June 3, 1898, 134 (Santa Marta, Colombia; coll. E. A. and O. Bangs).

Comparison of a fine series of this form with an equally good one of *M. s. wagleri* from Panamá and Costa Rica, fails to verify other characters given in the original description. (See measurements on p. 74.)

hh. Back narrowly barred with white (the bars averaging less, usually much less, than 2 mm. wide); primaries with little if any white on basal portion of outer web; under parts darker (deep olive-drab or yellowish drab) with yellow of abdomen deeper (saffron yellow or orange-yellow); middle rectrices sometimes with white on basal portion of inner web; nape orange-red, in adult male usually confluent with red crown-patch. (*Centurus santacruzi*.)

i. Larger (averaging wing more than 131, tail more than 72, culmen more than 29 in male, wing more than 129, tail more than 72, culmen more than 26, in female).

j. Under parts averaging darker, white bars on back, etc., narrower, and forehead less purely white. (Chiapas and Guatemala through Salvador to northern Nicaragua.)

***Centurus santacruzi santacruzi* (p. 84).**

jj. Under parts averaging paler, forehead more purely white, and white bars on back, etc., broader. (Southern Tamaulipas, Puebla, Vera Cruz, and northeastern Oaxaca.)

***Centurus santacruzi grateloupensis* (p. 87).**

ii. Smaller (averaging wing 123.7, tail 69.2, culmen 27.4 in male, wing 119.5, tail 66.9, culmen 25.8 in female); in coloration averaging darker than *C. s. santacruzi*. (Honduras.)

***Centurus santacruzi pauper* (p. 88).**

ee. A large superciliary patch of black; outer (as well as inner) web of middle rectrices broadly barred with white; lateral rectrices barred to base. (*Centurus chrysogenys*.)

f. Nape reddish orange or orange-red. (Sinaloa and Tepic.)

***Centurus chrysogenys chrysogenys* (p. 89).**

ff. Nape orange-yellow (in adult male abruptly contrasted with red of occiput and crown). (Jalisco, Michoacan, Colima, and Guerrero.)

***Centurus chrysogenys flavinuchus* (p. 91).**

cc. Hindneck grayish brown or drab.

d. Orbital region partly black; lateral rectrices barred only on distal portion; rump and upper tail-coverts streaked with black; abdomen white. Southern Mexico, in States of Puebla, Oaxaca, Morelos, and Guerrero.)

***Centurus hypopolius* (p. 92).**

dd. Orbital region without any black; lateral rectrices barred to base; rump and upper tail-coverts barred with black; abdomen yellow. (*Centurus uropygialis*.)

e. Larger, with relatively smaller bill; bars on back, etc., averaging broader (white ones about 2-2.5 mm. wide), and bars on rump, upper tail-coverts, and lateral rectrices averaging broader; adult male averaging: wing 131.1, tail 81, culmen 30.3, tarsus 22.8, outer anterior toe 19.1; adult female, wing 128, tail 73, culmen 26.4, tarsus 26.4, outer anterior toe 18. (Southeastern California, northern Lower California, Arizona, and western Mexico south to Durango and Jalisco.)

***Centurus uropygialis uropygialis* (p. 93).**

ee. Smaller, with relatively larger bill; bars on back, etc., averaging narrower (white ones about 1.5-2 mm. wide), black bars on rump and upper tail-coverts averaging narrower and more numerous, and bars on tail narrower; adult male averaging: wing 127.8, tail 77.9, culmen 29.9, tarsus 22.6, outer anterior toe 17.7; adult female, wing 123, tail 73.2, culmen 24.9, tarsus 21, outer anterior toe 16.6. (Cape San Lucas district of Lower California.).....***Centurus uropygialis brewsteri* (p. 96).**

bb. Rump and upper tail-coverts black, narrowly barred with white. (Jamaica.)

***Centurus radiolatus* (p. 97).**

aa. Lower rump and upper tail-coverts red. (Haiti.).....***Centurus striatus* (p. 98).**



## CENTURUS CAROLINUS (Linnæus).

## RED-BELLIED WOODPECKER.

*Adult male*.—Forehead and nasal tufts light red, the latter usually paler (sometimes dull whitish) anteriorly; crown, occiput, nape, and hindneck bright poppy red, lighter or more scarlet on hindneck; back and scapulars regularly and sharply barred with black and white, the white bars usually rather narrower than the black interspaces, the wing-coverts similarly barred but the white bars relatively narrower, the secondaries also with broad white bars changing to spots on the distal quills; primaries and primary coverts black, the former blotched with white subbasally, the longer quills (except outermost) narrowly edged with white distally (except in worn plumage), the others tipped or broadly margined at tip with white; upper rump barred with black and white, but bars less sharply defined than on back; lower rump white, usually barred, spotted, or broadly streaked with black (rarely immaculate or nearly so); upper tail-coverts white, often immaculate, but (usually) with a narrow shaft-streak of black, at least basally; tail black, the inner web of middle pair of rectrices white with bars or transverse spots of black (exceedingly variable as to number, size, etc.), the outer web usually with a wedge-shaped longitudinal streak of white on basal half, at least, the lateral rectrices tipped with white and with broad (usually interrupted) bars of white on distal portion; loreal, superciliary, auricular, suborbital, and malar regions pale to very pale buffy grayish, usually more or less tinged with pale red (sometimes wholly pale red, like frontal region); chin and upper throat similar but paler dull grayish buffy white (sometimes pale red or more or less tinged with the same), passing posteriorly into pale yellowish smoke grayish on chest, breast, and sides (the yellowish tinge, however, sometimes absent); abdomen pale red or reddish pink, this color sometimes tinging, more or less strongly, the breast, etc.; flanks and under tail-coverts white, barred or streaked with black or with V-shaped markings of the same, the white ground color usually tinged, more or less, with dull yellowish; bill blackish or slate-blackish, the basal portion of gonys sometimes light grayish; iris varying from ferruginous to scarlet; legs and feet olivaceous, or grayish olive-green; length (skins), 200–237 (221.9); wing, 123.5–139 (131); tail, 72.5–85 (77.7); culmen, 28–33 (29.8); tarsus, 20–23 (21.9); outer anterior toe, 16.5–20 (17.9).<sup>a</sup>

*Adult female*.—Similar to the adult male, but whole crown and occiput gray (paler anteriorly, the occiput frequently intermixed, more or less, with black), and red of abdomen usually much paler as well as more restricted; length (skins), 196–238 (215); wing, 122–133

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<sup>a</sup> Forty-one specimens.

(128.3); tail, 68–83.5 (77.1); culmen, 25.5–30 (27.6); tarsus, 20–22 (21); outer anterior toe, 16.5–18 (17.2).<sup>a</sup>

*Young male*.—Essentially like the adult female, but coloration much duller, the barring of back, etc., less sharply defined, abdomen without red tinge (in first plumage), chest with indistinct shaft-streaks of dusky, and without any distinct red on head, the hindneck faintly tinged with pink, the crown (usually at least) tinged with deeper reddish on a dusky or dingy grayish ground color, the forehead lighter dingy grayish, the nasal tufts still paler grayish or brownish.

*Young female*.—Similar to the young male, but pileum darker grayish or dusky.

<sup>a</sup> Forty specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from Atlantic States (New York to Virginia) . .	133	78.8	30.3	21.9	18
Ten adult males from Illinois (8), Kentucky (1), and Missouri (1) .	133.3	79.4	30.6	21.5	17.8
One adult male from Oklahoma . . . . .	131	75.5	26.5	22	18
Eight adult males from Texas . . . . .	130.4	76.9	29.7	22	17.9
One adult male from Louisiana . . . . .	129	78	30.5	22.5	18.5
One adult male from Mississippi . . . . .	123.5	-----	30	21.5	18.5
Ten adult males from Florida . . . . .	127.9	76	29	22.1	17.8
FEMALES.					
Ten adult females from Atlantic States . . . . .	128.6	76	29.5	22	17
Ten adult females from Illinois (6), Indiana (1), and Ken- tucky (3) . . . . .	130.8	79.1	28.6	21.3	17.5
One adult female from Oklahoma . . . . .	130	80	28	21	17.5
Eight adult females from Texas . . . . .	128.6	76.1	27.9	21.1	17.3
One adult female from Louisiana . . . . .	123	73.5	28	21	17.5
Nine adult females from Florida . . . . .	125.6	76.9	26.8	20.6	16.8
One adult female from South Carolina . . . . .	126	80	26	20	17

The individual variation in this species is very considerable, especially in respect to the amount of red tinge to the under parts and sides of the head in adult males. As a general rule, specimens from the Mississippi Valley and Texas are much more strongly tinged with red than those from east of the Allegheny Mountains; but occasional specimens from the Atlantic coast district are similarly colored, while many of those from the interior are not at all different from eastern examples. Specimens from Florida, Georgia, and lower South Carolina, besides averaging smaller, are slightly darker in color, especially the under parts, which rarely if ever have the yellowish cast so often observable in those from other sections. This greater darkness and dullness of the under parts is, however, to a certain extent due to the soiling of the plumage by contact with charred wood. The white bars on the back, too, as a rule, are relatively somewhat narrower than in specimens from northern and western localities, the opposite extreme being observable in some of the Texan examples.

While the differences noted would, if reasonably constant, be quite sufficient for the definition of three geographic forms or subspecies, according to my present views they are not sufficiently correlated with geographic area to justify subdivision of the species.

Upper and Lower Austral zones of eastern United States; north, regularly, to Delaware, central and western New York, southwestern Ontario, southern Michigan, southern Wisconsin, and southeastern Minnesota, irregularly or casually to northern New York (Lewis County), Connecticut, and Massachusetts; west to southeastern South Dakota, eastern Nebraska, eastern Kansas, Oklahoma (Mount Scott), west central Texas, etc., casually to Colorado (Boulder County; Yuma; Greeley; Limon); south to southern Florida and along Gulf coast to central Texas (south to Bee and Concho counties); accidental in Arizona (Fort Grant).

[*Picus*] *carolinus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 113 (based on *The Red-bellied Woodpecker*, *Picus ventre rubro*, Catesby, Nat. Hist. Car., i, 19, pl. 19, fig. 2); ed. 12, i, 1766, 174, part (excl. syn. *Picus varius medius* Sloane, *Picus varius jamaicensis* Brisson, and *Picus jamaicensis* Edwards).<sup>a</sup>—GMELIN, Syst. Nat., i, pt. i, 1788, 431.—LATHAM, Index Orn., i, 1790, 231.

*Picus carolinus* WILSON, Am. Orn., i, 1808, 113, pl. 7, fig. 2.—VIEILLLOT, Nouv. Dict. d'Hist. Nat., xxiv, 1818, 93.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 45.—VALENCIENNES, Dict. Sci. Nat., xl, 1826, 181.—DRAPIER, Dict. Class., xiii, 1828, 496.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 572; 2d ed., 1840, 677.—AUDUBON, Orn. Biog., v, 1839, 169, pl. 415, fig. 3; pl. 416, fig. 4; Synopsis, 1839, 183; Birds Am., oct. ed., iv, 1842, 270, pl. 270.—MAXIMILIAN, Journ. für Orn., 1858, 418.—SUNDEVALL, Consp. Av. Picin., 1866, 53.

*P[icus] carolinus* LICHTENSTEIN, Verz. Doubl., 1823, 10.—BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 370; Obs. Wils. Am. Orn., 1826, [31].

*Centurus carolinus* BONAPARTE, Comp. and Geog. List, 1838, 40.—SCLATER, Cat. Am. Birds, 1862, 342 (e. North America).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 109; Cat. N. Am. Birds, 1859, no. 91.—CABANIS, Journ. für Orn., 1862, 324 (crit.).—TAYLOR, Ibis, 1862, 128 (Florida).—ALLEN, Proc. Essex Inst., iv, 1864, 53 (Massachusetts, accidental); Bull. Mus. Comp. Zool., ii, 1871, 306 (Florida); iii, 1872, 180 (Kansas); Bull. Nutt. Orn. Club, vi, 1881, 183 (Massachusetts).—DRESSER, Ibis, 1865, 469 (San Antonio, etc., Texas, common resident).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 291 (vicinity New York City).—GRAY, List Birds Brit. Mus., Picidæ, 1868, 99.—TRIPPE, Proc. Bost. Soc. N. H., xv, 1872, 233 (Decatur and Mahaska counties, Iowa, breeding).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 129 (Leavenworth and Topeka, Kansas; crit.).—SNOW, Birds Kansas, 1873, 3.—COUES, Check List, 1873, no. 306; 2d ed., 1882, no. 450; Birds Northwest, 1874, 289.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 554, pl. 52, figs. 1, 4.—RIDGWAY, Bull. Essex Inst., v, 1873, 177, 185 (Colorado); Field and Forest, i, 1877, 209 (Boulder Co., Colorado); Proc. U. S. Nat. Mus., iii, 1880, 189; iv, 1881, 99 (monogr.); Nom. N. Am. Birds, 1881, no. 372.—BREWSTER, Ann. Lyc. N. Y., xi, 1875, 144 (Ritchie Co., West Virginia; habits); Bull. Nutt. Orn. Club, iii, 1878, 181 (descr. young female).—MERRIAM, Trans. Conn. Ac. Sci., iv, 1877, 65 (accidental in Connecticut); Bull. Nutt. Orn. Club, iv, 1879, 6 (Lewis Co., New York, 1 spec., winter).—MEARNS, Bull. Nutt. Orn. Club, iii, 1878, 146 (Cornwall, 1 spec., Sept., 1870).—RATHBUN (F. R.), Rev. List Birds Centr. New York, 1879, 25 (resident).—PLUMMER, Bull. Nutt. Orn. Club, vi, 1881, 120 (Newton, Massachusetts, 1 spec., Nov. 25, 1880).—BROWN, (N. C.), Bull. Nutt. Orn. Club, vii, 1882, 40 (Boerne, Kendall Co., s. w.

<sup>a</sup> = *C. radiolatus* (Wagler).



- Texas, rare).—NEHRING, Bull. Nutt. Orn. Club, vii, 1882, 171 (s. e. Texas, breeding).—OGILBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 59 (Navarro Co., Texas, abundant resident; habits).—AGERSBORG, Auk, ii, 1885, 283 (s. e. South Dakota).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 342; Check List, 3rd ed., 1910, 193.—HESS, Auk, xxvii, 1904, 24 (Champaign Co., centr. Illinois, breeding).—STOCKARD, Auk, xxi, 1904, 466–467 (breeding habits in Mississippi).—WILSON, Wilson Bull., no. 54, 1906, 4 (Scott Co., Iowa, resident).—HENNINGER, Wilson Bull., n. s., xiii, 1906, 53 (Seneca Co., Ohio, May 10–Nov. 26).—FOWLER, Auk, xxiii, 1906, 399 (Boca Chica, Big Pine, Knight, and Grassy Keys, Florida).—FLEMING, Auk, xxiv, 1907, 76 (Toronto, Ontario, 4 records).—WOODRUFF, Bull. vi, Chicago Ac. Sci., 1907, 112 (Chicago area, rare migrant).—ANDERSON, Proc. Davenport Ac. Sci., xi, 1907, 277 (s. and centr. Iowa, resident).—NASH, Vertebr. Ontario, 1908, Birds, p. 51 (s. w. Ontario, rare summer resident).—COOKE, Auk, xxvi, 1909, 413 (Yuma, Colorado, Oct.).—SHERMAN, Wilson Bull., xxi, 1909, 156 (Steuben, Wisconsin, 1 spec., April 16, 1909).—MCKECHNIE, Auk, xxvi, 1909, 199 (Hull, Massachusetts, 1 spec., 1882).—WOOD and TINKER, Auk, xxvii, 1910, 132 (Michigan records).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 47 (food).
- [*Centurus*] *carolinus* BONAPARTE, Consp. Av., i, 1850, 119.—GRAY, Hand-list, i, 1869, 197, no. 8758.—COUES, Key N. Am. Birds, 1872, 196.
- [*Centurus*] *carolinus* NELSON, Bull. Essex Inst., viii, 1876, 116, 153 (n. e. Illinois, rare summer resident).—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 97 (diagnosis).—COUES, Key N. Am. Birds, 2d ed., 1884, 488.
- [*Centurus carolinus*] var. *carolinus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 554.
- Zebrapicus carolinus* MALHERBE, Mém. Acad. Metz, xxx, 1849, 361; Mon. Pict., ii, 1862, 234; iv, 1862, pl. 103, figs. 7, 8.
- [*Melanerpes*] *carolinus* RIDGWAY, Ann. Lyc. N. Y., x, Jan., 1874, 378 (Illinois); Man. N. Am. Birds, 1887, 293.
- Melanerpes carolinus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 409.—ALLEN, Bull. Am. Mus. N. H., i, 1886, 247 (Massachusetts, rare straggler; records).—LLOYD, Auk, iv, 1887, 191 (main Concho R., w. Texas, winter resident).—BECKHAM, Proc. U. S. Nat. Mus., x, 1888, 664 (San Antonio, Texas, common; Corpus Christi).—KEYES and WILLIAMS, Proc. Davenport Ac. Sci., v, 1888, (21) (Des Moines, Iowa City, etc., common resident).—HASBROUCK, Auk, vi, 1889, 238 (Eastland Co., Texas; crit.).—SCOTT, Auk, vi, 1889, 251 (Tarpon Springs, Punta Rassa, and Key West, Florida).—RIDGWAY, Orn. Illinois, i, 1889, 384.—BERGTOLD, List Birds Buffalo, New York, 1889, 12 (straggler).—LEWIS, Auk, vii, 1890, 206 (Newton, n. w. New Jersey, 1 spec., Nov. 16).—MORTIMER, Auk, vii, 1890, 339 (Orange Co., Florida; habits).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 170 ("Canada;" Locust Grove, New York; Evanston, n. e. Illinois; Cedar Keys, Bluffton, Hawk, Hawkinsville, Volusia, and Okahumkee, Florida; Texas; "Mexico;" etc.).—SMITH (R. W.), Journ. Cinc. Soc. N. H., 1891, 117 (Warren Co., Ohio, resident).—MILLER (G. S.), Auk, ix, 1892, 201 (Madison Co., New York, 1 spec., Dec.).—COOK, Bull. 54, Mich. Agric. Exp. Sta., 1893, 90 (Albion, St. Joseph, Port Sainlac, Niles, etc., s. Michigan, breeding).—DUTCHER, Auk, x, 1893, 275 (Long Island records).—JACOBS, Summer Birds Green Co., Pennsylvania, 1893, 7 (common).—GRUNDTVIG, Trans. Wisc. Ac. Sci., etc., 1894, 114 (Shiocton, Wisconsin, Sept., Nov., Dec., Feb., April).—SINGLEY, Rep. Geol. Surv. Tex., 1894, 350 (Lee Co., Texas, resident).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 121.—SAVAGE, Auk, xii, 1895, 313 (Erie Co., Pennsylvania, 1 spec., Oct.).—ULREY and WALLACE,

Proc. Ind. Ac. Sci., 1895, 152 (Wabash, Indiana, abundant resident).—LAWRENCE (R. B.), Auk, xiii, 1896, 82 (Flushing, Babylon, and Raynor South, Long Island; 3 specs.).—OBERHOLSER, Bull. Ohio Agric. Exp. Sta., tech. ser., i, 1896, 290 (Wayne Co., n. e. Ohio, common resident).—HADLEY, Proc. Ind. Ac. Sci., 1897, 187 (Richmond, Wayne Co., Indiana, resident).—COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 84 (Greeley, etc., Colorado; very rare); no. 56, 1900, 208 (Limon, Colorado, 1 spec., May, 1899).—JONES, Wilson Bull., no. 16, 1897, 61 (Oberlin, Ohio; increasing); no. 22, 1898, 62 (Lorain Co., Ohio; increasing).—BEYER, Proc. Louis. Soc. Nat. for 1897-99 (1900), 103 (Louisiana, resident).—FISHER (W. H.), Auk, xx, 1903, 305 (Harford Co., Maryland, breeding).

[*Melanerpes*] *carolinus* SHARPE, Hand-list, ii, 1900, 211.

*C[enturus]* *carolinensis* SWAINSON, Classif. Birds, ii, 1837, 310.

*Centurus carolinensis* ABBOTT, Am. Nat., iv, 1870, 538 (New Jersey).—BECKHAM, Bull. Nutt. Orn. Club, vii, 1882, 164 (Bayou Sara, Louisiana).—SETON, Auk, ii, 1885, 335 (Toronto, Ontario).

*Picus zebra* BODDAERT, Tabl. Pl. Enl., 1783, 43 (based on *Epeiche ou Pic rayé de la Louisiane* Daubenton, Pl. Enl., pl. 692).

*Picus carolinus* var.  $\gamma$ . LATHAM, Index Orn., i, 1790, 231.

*Picus griseus* VIEILLOT, Ois. Am. Sept., ii, 1807, 62, pl. 116 (Pennsylvania, New Jersey, etc.).—BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1308.

*P[icus]* *erythrauchen* WAGLER, Syst. Av., 1827, *Picus*, sp. 38 (new name for *Picus carolinus* Linnæus); Isis, 1829, 513.

*Picus querulus* (not of Wilson) HAYMOND, Proc. Ac. Nat. Sci. Phila., 1856, 293 (s. e. Indiana).

## CENTURUS SUPERCILIARIS SUPERCILIARIS (Temminck).

### SUPERCILIARY WOODPECKER.

*Adult male*.—Crown, occiput, nape, and hindneck bright crimson or carmine, rather lighter on the hindneck; back and scapulars broadly barred with black and pale buffy yellowish, the bars of the latter rather narrower than the black interspaces; rump and upper tail-coverts white, barred with black, the black markings more spot-like, more or less cordate, on rump, usually V- or U-shaped on longer upper tail-coverts; tail black, the middle pair of rectrices broadly barred with white (white bars sometimes broader than the white interspaces), the lateral rectrices more narrowly barred with white, at least on outer web and terminal portion of inner web; wings black, the coverts and secondaries broadly barred with white (the white bars sometimes exceeding the black interspaces in width, either on coverts or secondaries), the basal portion of primaries spotted or otherwise marked with white; forehead and anterior portion of superciliary region dull grayish white or brownish white, the latero-frontal or post-nasal region red; a large, elongated supra-auricular spot or patch of black, extending anteriorly around upper portion of eye to the anterior angle of the latter; loreal and suborbital regions white, passing into duller white or very pale grayish buffy on auricular and malar regions, the chin and upper throat similar but slightly darker; under parts mostly plain light buffy grayish brown to dull brownish buffy,

more or less tinged or suffused with saffron yellowish posteriorly, the abdomen (more or less extensively) bright poppy red; flanks broadly but irregularly barred with dusky (the bars sometimes more or less V-shaped); under tail-coverts similarly, but more distinctly, barred, the ground color paler and more or less tinged with red; under wing-coverts white, irregularly and rather sparsely barred with black, sometimes nearly immaculate; inner webs of remiges extensively white basally, more or less barred with dusky; bill dull black; legs and feet greenish dusky in dried skins (greenish gray or grayish green in life?); length (skins), 259–300 (278); wing, 142.5–157.5 (147.3); tail, 86.5–111 (99.5); culmen, 37.5–42.5 (39.8); tarsus, 25–27 (25.9); outer anterior toe, 21.5–24 (22.6).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crown pale brownish gray, passing gradually into the dull whitish of forehead, and the black supra-auricular areas connected by a broad band across occiput; length (skins), 245–285 (261); wing, 137–150 (144.5); tail, 85–105 (98.7); culmen, 32.5–39.5 (35.5); tarsus, 23–27 (25.1); outer anterior toe, 20–23 (21.7).<sup>a</sup>

*Young male*.—Similar to the adult male, but red of frontlet less extensive, paler; anterior portion of crown much duller red, the remainder of crown and occiput black washed with red; back, scapulars, chest, and breast tinged with red; posterior under parts less distinctly barred.

*Young female*.—Similar to the young male, but anterior portion of crown pale buffy grayish, tinged with red.

Island of Cuba (Remédios; Fermina; Guamá; El Guamá; Holquín; Guantánamo Bay; Trinidad; Camaguéy; Yateras; Santiago de Cuba; San Diego de los Baños; Santa Fé; Tuabéque).

*Picus superciliaris* TEMMINCK, Pl. Col., 73e livr., 1827, pl. 433 and text (Cuba; coll. Mus. Pays-Bas).—LESSON, Man. d'Orn., 1828, 112; Traité d'Orn., i, 1831, 227; Compl. Buffon, ix, 1837, 324.—CUVIER, Règne Anim., 2 ed., 1829, 451.—THEINEMAN, Journ. für Orn., 1857, 153.—SUNDEVALL, Consp. Av. Picin., 1866, 55.

*P[icus] superciliaris* WAGLER, Isis, 1829, 515.

*Colaptes superciliaris* VIGORS, Zool. Journ., iii, 1828, 445.—WAGNER, Wiegmann's Archiv für Naturg., 1841, 100.—D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Aves, 1839, 111, pl. 23 (albino); French ed., p. 146.—LEMBEYE, Aves de la Isla de Cuba, 1850, 131.

*Zebrapicus superciliaris* MALHERBE, Mém. Acad. Metz, xxx, 1849, 361; Mon. Pucid., ii, 1862, 223; iv, 1862, pl. 102, figs. 1, 2, 3.

[*Centurus*] *superciliaris* BONAPARTE, Consp. Av., i, 1850, 118; Ateneo Italiano, ii, 1854, 126.—GUNDLACH, Journ. für Orn., 1861, 334; Repert. Fisico-Nat. Cuba, i, 1866, 294.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101.—CORY, List Birds West Ind., 1885, 20.

<sup>a</sup> Ten specimens.



- Centurus superciliaris* CABANIS, Journ. für Orn., 1856, 103 (habits; crit.).—GUNDLACH, Journ. für Orn., 1874, 152 (habits); Orn. Cubana, ed. 1895, 141.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 307.—SCLATER, Cat. Am. Birds, 1862, 342.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 115 (monogr.).—CORY, Auk, iii, 1886, 379; Birds West Ind., 1889, 174.—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 301 (near Trinidad, s. Cuba).
- C[enturus] superciliaris* REICHENBACH, Handb. Scansores, Picinæ, 1854, 408, pl. 662, figs. 4400-4401.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 98 (diagnosis).
- C[enturus] superciliaris superciliaris* BANGS, Proc. Biol. Soc. Wash., xxiii, Dec. 29, 1910, 173, in text.
- M[elanerpes] superciliaris* RIDGWAY, Man. N. Am. Birds, 1887, 292.
- Melanerpes superciliaris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 167.—CORY, Cat. West Ind. Birds, 1892, 12, 104, 128.—MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 23 (Guantanamo, e. Cuba).
- [Melanerpes] superciliaris* SHARPE, Hand-list, ii, 1900, 210.
- C[olaptes] superciliosus* GRAY, Gen. Birds, ii, 1846, 446.
- "*Picus subocularis* LESS[ON], Descr. d'Ois. réc. découv., 1847, p. 205, no. 33, le mâle" (Malherbe).

### CENTURUS SUPERCILIARIS MURCEUS Bangs.

#### ISLE OF PINES WOODPECKER.

Similar to *C. s. superciliaris* but decidedly smaller, and under parts of body paler and decidedly less yellowish.

*Adult male*.—Length (skins), 246-264 (255.6); wing, 135.5-143 (138.4); tail, 92-97 (94.5); culmen, 36-40.5 (38.2); tarsus, 23-25.5 (24.4); outer anterior toe, 20-21.5 (20.8).<sup>a</sup>

*Adult female*.—Length (skins), 242-259 (250); wing, 131.5-139.5 (135.5); tail, 85.5-99 (92.3); culmen, 34-35 (34.5); tarsus, 24-25 (24.5); outer anterior toe, 19-20.5 (19.8).<sup>b</sup>

Isle of Pines, Cuba (Nueva Gerona; Santa Fé; San Juan; Júcaro; Almacigos).

*Melanerpes superciliaris* (not *Picus superciliaris* Temminck) BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 206 (Isle of Pines; crit.).

*Centurus superciliaris murceus* BANGS, Proc. Biol. Soc. Wash., xxiii, Dec. 29, 1910, 173 (San Juan, Isle of Pines; coll. Mus. Comp. Zool.).

### CENTURUS BLAKEI BLAKEI Ridgway.

#### BLAKE'S WOODPECKER.

Similar to *C. superciliaris* but much smaller; black superciliary area much smaller; postnasal region (frontal antiæ) much paler red; rectrices with much less white; red of abdomen lighter and more restricted, and color of breast, etc., more grayish (less yellowish). Similar also to *C. nyanus* but postnasal spots smaller and much less deeply red, forehead less purely white, white bars on upper parts

<sup>a</sup> Six specimens.

<sup>b</sup> Two specimens.

averaging narrower, and posterior under parts more heavily or distinctly barred, the adult male with a conspicuous superciliary spot of black, the adult female with posterior half of crown mostly black (instead of wholly pale gray).

*Adult male*.—Postnasal region (frontal antiæ) pale dull red; forehead (broadly), loreal region, and adjacent parts of orbital region, dull white; a conspicuous superciliary area of black, originating above anterior extremity of the naked orbital area and extending backward as far as middle of auricular region (at least); crown, occiput, and hindneck bright poppy red, somewhat lighter or more scarlet posteriorly; back, scapulars, and wing-coverts sharply and regularly barred (broadly) with black and white, the white bars averaging rather narrower than the black ones, the secondaries similarly barred but the black interspaces much wider and (except on inner secondaries) the white bars also much wider; rump and upper tail-coverts white, rather distantly barred with black, the bars on longer upper tail-coverts less regular, sometimes more or less U- or V-shaped; primaries black, their outer webs blotched or spotted with white on sub-basal portion, the inner quills tipped or terminally margined with white; tail black, the inner web of middle rectrices with broad oblique bars or transverse quadrate spots of white, the outer web sometimes with spots, or a wedge-shaped streak, of white, the outermost pair with several broad white transverse spots, or interrupted bars, on distal portion; auricular region very pale buffy smoke grayish, fading into dull buffy grayish white on malar region, chin, and upper throat, this gradually deepening into pale smoke gray on foreneck and chest, this gradually passing into a more yellowish light smoke grayish on breast, upper abdomen, and sides; lower abdomen, superficially, bright red, but beneath surface pale dull yellowish and grayish, rather indistinctly barred with dusky; flanks and under tail-coverts dull white, tinged with pale ocher-yellow, broadly barred with black, the black bars more V-shaped on under tail-coverts; bill slate-blackish; legs and feet dusky grayish (in dried skins); length (skins), 224–256 (245); wing, 129–137 (133.3); tail, 85.5–91 (88.9); culmen, 31.5–33 (32); tarsus, 22–24 (22.8); outer anterior toe, 18–19.5 (19).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crown dull buffy grayish white (like forehead) anteriorly passing, through pale smoke grayish on middle portion, into black posteriorly, the black feathers tipped, more or less broadly, with pale smoke gray, this black area confluent laterally with the black superciliary spots; length (skins), 220–250 (232); wing, 123.5–132 (129.6); tail, 85.5–91 (88.1); cul-

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<sup>a</sup> Ten specimens.

men, 27–30.5 (28.4); tarsus, 21–22.5 (21.7); outer anterior toe, 17.5–19 (18.4).<sup>a</sup>

Island of Abaco, Bahamas.

*Centurus blakei* RIDGWAY, Auk, iii, July, 1886, 337 (Abaco Island, Bahamas; coll. U. S. Nat. Mus.); viii, 1891, 334 (Abaco I.).—CORY, Birds West Ind., 1889, 296; Auk, v, 1888, 159; viii, 1890, 350.—ALLEN (G. M.), Auk, xxii, 1905, 126 (Great Abaco).

*Melanerpes blakei* RIDGWAY, Man. N. Am. Birds, 1887, 292.

*Melanerpes blakei* CORY, Cat. West Ind. Birds, 1892, 12, 104, 126, 127, 142.

[*Melanerpes*] *blakei* SHARPE, Hand-list, ii, 1900, 210.

*Centurus superciliaris blakei* RILEY, Auk, xxii, Oct., 1905, 355, in text (crit.).

*Melanerpes blakei* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 168.

*Centurus nyeanus blakei* TODD, Ann. Carnegie Mus., vii, Oct., 1911, 422 (Abaco I.; measurements; crit.).—WORTHINGTON, Ann. Carnegie Mus., vii, 1911, 454 (Abaco).

**CENTURUS BLAKEI BAHAMENSIS (Cory).**

**BAHAMA WOODPECKER.**

Similar to *C. b. blakei*, but dorsal region and under parts more strongly tinged with yellowish, forehead slightly duller whitish, postnasal region deeper red, and with red of abdomen paler and rather more restricted.

*Adult male*.—Length (skins), 223–228 (225.5); wing, 131–131.5 (131.2); tail, 91–92.5 (91.8); culmen, 30–31 (30.5); tarsus, 22.5–23 (22.8); outer anterior toe, 18–18.5 (18.3).<sup>b</sup>

*Adult female*.—Length (skin), 205; wing, 128.5; tail, 85.5; culmen, 28.5; tarsus, 22; outer anterior toe, 18.<sup>c</sup>

Great Bahama Island, Bahamas.

*Centurus bahamensis* CORY, Auk, ix, Oct., 1892, 270 (Great Bahama I., Bahamas; coll. C. B. Cory); Cat. West Ind. Birds, 1892, 12, 104, 126, 127, 143.

[*Melanerpes*] *bahamensis* SHARPE, Hand-list, ii, 1900, 211.

*C[enturus] nyeanus bahamensis* TODD, Ann. Carnegie Mus., vii, Oct., 1911, 423, in text.

**CENTURUS NYEANUS Ridgway.**

**NYE'S WOODPECKER.**

Similar to *C. blakei bahamensis* but without a distinct (if any) black superciliary spot, postnasal region (frontal antiæ) much more deeply red, forehead more purely white, white bars on back, etc., relatively wider, under parts of body more strongly tinged with yellowish, posterior under parts less distinctly barred, and adult female without black on posterior crown or occiput.

*Adult male*.—Frontal antiæ poppy red (paler anteriorly); forehead (broadly), together with loreal and orbital regions and anterior portion

<sup>a</sup> Nine specimens.

<sup>b</sup> Two specimens.

<sup>c</sup> One specimen.



of malar region, dull white or buffy white, passing into very pale grayish buffy or dull buffy grayish white on auricular region and posterior portion of malar region; crown (except lateral-anterior portion), occiput, and hindneck bright poppy red, somewhat lighter or more scarlet posteriorly; back, scapulars, and wing-coverts broadly and regularly barred with black and white, or yellowish white, the black bars averaging rather narrower than the white interspaces; the secondaries similarly but (except on inner or proximal ones) much more broadly barred; primaries black, heavily blotched with white on sub-basal portion of outer web, the inner quills broadly margined at tip with white; rump and upper tail-coverts white, rather distantly barred with black; tail black, the inner web of middle pair of rectrices with several broad oblique bars, or transverse quadrate spots, of white, the outer web with a longitudinal, wedge-shaped streak of white on proximal portion (usually concealed, or mostly so, by upper coverts), the outer pair with several broad bars or transverse spots on distal portion; chin and upper throat (sometimes whole throat) very pale ochereous gray or dull buffy grayish white, gradually deepening into a more decided buffy grayish hue on foreneck, chest, breast, sides, and upper abdomen, the under parts of body tinged or stained with light ocher-yellow or dull gallstone yellow, especially on upper abdomen; lower abdomen bright red superficially; flanks and under tail-coverts dull white strongly tinged or washed with light gallstone yellow (the under tail-coverts frequently tinged slightly with red), broadly but not very sharply barred with blackish, the bars more or less inclining to V-shaped form, especially on under tail-coverts; bill slate-blackish, usually somewhat paler along gonys, at least basally; iris red or reddish brown; legs and feet dusky grayish in dried skins, pale olive in life; length (skins), 232–248 (236); wing, 127.5–132.5 (129.5); tail, 84.5–92 (88.9); culmen, 32–33.5 (32.9); tarsus, 22.5–24 (23.1); outer anterior toe, 19.5–20.5 (20).<sup>a</sup>

*Adult female*.—Similar to the adult male but crown dull white (like forehead) anteriorly, shading gradually into light smoke gray posteriorly; length (skins), 223–235 (224); wing, 128–131.5 (129.3); tail, 89–93 (91.3); culmen, 28–28.5 (28.2); tarsus, 21–22 (21.7); outer anterior toe, 18–18.5 (18.2).<sup>b</sup>

Watling Island, Bahamas.

*Centurus nyeanus* RIDGWAY, Auk, iii, July, 1886, 336 (Watling I., Bahamas; coll. U. S. Nat. Mus.).—CORY, Birds West Ind., 1889, 295; Auk, v, 1888, 159; viii, 1891, 337.—NYE, Auk, xvi, 1899, 273 (supposed to be extinct—error).—RILEY, Auk, xx, 1903, 434 (second specimen; crit.).

*Melanerpes nyeanus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 169.—CORY, Cat. West Ind. Birds, 1892, 12, 104, 126, 127, 142.

<sup>a</sup> Seven specimens.

<sup>b</sup> Three specimens.

*Melanerpes*] *nyeanus* RIDGWAY, Man. N. Am. Birds, 1887, 292.

[*Melanerpes*] *nyeanus* SHARPE, Hand-list, ii, 1900, 211.

*Centurus superciliaris nyeanus* RILEY, Auk, xxii, Oct., 1905, 355 (crit.).

*Centurus nyeanus nyeanus* TODD, Ann. Carnegie Mus., vii, Oct., 1911, 421 (crit.).—

WORTHINGTON, Ann. Carnegie Mus., vii, 1911, 454 (habits. etc.).

### CENTURUS CAYMANENSIS Cory.

#### CAYMAN WOODPECKER.

Somewhat like *C. superciliaris* but smaller; no trace of black superciliary spot; back, etc., more narrowly barred with black; post-nasal red spot nearly obsolete and under parts paler and less yellowish; adult female without a black occipital area.

*Adult male*.—Forehead and superciliary region dull brownish white, the former tinged with red on the latero-frontal antiæ; crown, occiput, and hindneck bright poppy red, the first rather deeper, more carmine; back, scapulars, and rump barred with black on a pale buffy yellowish ground, the black bars much narrower than the interspaces; upper tail-coverts dull white, more or less tinged with buffy yellowish, narrowly and distantly barred, or otherwise marked, with black; tail black, the middle pair of rectrices with broad, oblique bars of white or yellowish white on inner web, and quadrate spots or a narrowly wedge-shaped streak of the same on outer web, the lateral rectrices broadly barred terminally and on outer web of the outermost with the same; wing-coverts barred with black and brownish white or buffy white, the black bars much narrower than the whitish interspaces; secondaries broadly barred with black and white or dull yellowish white, the bars of the two colors about equal in width, the black bars broadly confluent along the median (concealed) portion of each quill; primaries dull slate-blackish, their outer webs more or less spotted or otherwise varied with white basally and edged terminally with white, the inner primaries also tipped, more or less, with white; primary coverts and alulæ black, the latter sometimes narrowly edged with white; sides of head and neck and most of lower parts plain pale buffy grayish (much more buffy or yellowish than drab-gray), becoming gradually but decidedly paler on upper throat, chin, and malar and suborbital regions, the upper abdomen sometimes rather strongly tinged with yellowish; lower abdomen, superficially, bright, rather light, red; flanks and under tail-coverts dull whitish, strongly suffused with pale buff-yellowish, and barred (rather distantly) with dusky, the bars on under tail-coverts more or less V-shaped; under wing-coverts dull white with a few irregular and rather indistinct bars of dusky; inner webs of primaries with large blotches or irregular areas of white on basal portion, the inner webs of secondaries very broadly barred with white; bill dull black, paler on

lower basal portion of mandible; legs and feet grayish dusky (bluish gray or greenish gray in life?); length (skins), 205–253 (232); wing, 123–131.5 (127.8); tail, 80–94 (87); culmen, 31–37 (33.6); tarsus, 22.5–24 (23.5); outer anterior toe, 19–21 (20.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crown and occiput pale buffy gray (deeper posteriorly), the upper part of occiput, or hind part of crown, irregularly barred or spotted with black; length (skins), 212–245 (227); wing, 116–128 (123.8); tail, 80.5–91.5 (85.8); culmen, 29–33.5 (30.4); tarsus, 21–23.5 (22.3); outer anterior toe, 19–20 (19.2).<sup>b</sup>

Grand Cayman Island, south of Cuba.

*Centurus caymanensis* CORY, Auk, iii, Oct., 1886, 499, 502 (Grand Cayman, W. I.; coll. C. B. Cory); v, 1888, 158; Birds West Ind., 1889, 295.—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 574 (Grand Cayman).—LOWE, Ibis, 1909, 341 (Grand Cayman).

*Melanerpes caymanensis* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 169.—CORY, Cat. West Ind. Birds, 1892, 12, 104, 129, 142.—NICOLL, Ibis, 1904, 584 (Grand Cayman; crit.).—LOWE, Ibis, 1911, 150.

[*Melanerpes*] *caymanensis* SHARPE, Hand-list, ii, 1900, 211.

### CENTURUS DUBIUS DUBIUS (Cabot).

#### UXMÁL WOODPECKER.

*Adult male*.—Pileum and hindneck bright poppy red, interrupted by a frontal band of dull white, the latero-frontal (post-nasal) region slightly paler red, usually narrowly margined anteriorly and below by whitish; back, scapulars, and upper rump black, narrowly barred with white or dull yellowish white; lower rump and upper tail-coverts immaculate white; tail black, the lateral rectrices with a few narrow bars on terminal portion, their under surface more grayish or hoary; wings black, the coverts and proximal secondaries (tertials) narrowly barred with white, the distal secondaries more broadly barred or transversely spotted with the same; primaries narrowly edged with whitish or grayish for terminal half (approximately), the shorter (innermost) ones margined terminally with white; sides of head (including a broad superciliary stripe), chin, and throat, dull grayish white or very pale buffy grayish, gradually deepening in color on foreneck, sides of neck, chest, breast, and sides into very pale yellowish gray; abdomen (superficially) bright poppy red; flanks and under tail-coverts white, more or less suffused with red, rather broadly barred with black, the bars on under tail-coverts more or less V- or U-shaped; under wing-coverts white, barred with blackish; inner webs of primaries rather broadly barred with white for basal half (approximately), the inner webs of secondaries more

<sup>a</sup> Ten specimens.

<sup>b</sup> Nine specimens.



narrowly barred, along edge, for entire length; bill dull black, more brownish on lower basal portion of mandible; legs and feet grayish dusky (bluish gray or greenish gray in life?); length (skins), 228–241 (233); wing, 130–137 (133.3); tail, 77–83.5 (79.6); culmen, 30.5–34 (32.2); tarsus, 22–25 (23.5); outer anterior toe, 19–22 (20).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crown dull white, like forehead, passing into light buffy gray on occiput; length (skins), 206–238 (221); wing, 123–132 (127.2); tail, 71–80 (76.7); culmen, 25–32 (28.3); tarsus, 21–22.5 (21.8); outer anterior toe, 17.5–19.5 (18.5).<sup>b</sup>

*Young male*.—Similar to the adult male, but prefrontal region much paler and duller red, red of crown lighter and duller and more or less intermixed with blackish, general color of under parts grayer, red of abdomen paler, and white bars on back, etc., less sharply defined.

*Young female*.—Similar to the young male, but crown and occiput light buffy brownish gray.

Southeastern Mexico, in States of Campeche (Campeche; Canasa-yát), and Yucatan (Uxmál; Izamál; Temax; Tunkas; Tekanto; Tabi; Peto; Buctzotz; Shkolak; Labna; Chichen-Itza; La Vega; Puerto Morelos; Rio Lagartos), British Honduras (near Manatee Lagoon; Manatee River; Cayo; Rio Mopan; San Felipe; Belize), and adjacent lowlands of Guatemala.

*Picus dubius* CABOT, Proc. Bost. Soc. N. H., i, 1844, 164 (Uxmál, Yucatan; coll. Dr. S. Cabot); Journ. Bost. Soc. N. H., v, 1845, 91.

[*Centurus aurifrons*] *γ. dubius* RIDGWAY, Proc. U. S. Nat. Mus., iv, July 18, 1881, 97 (diagnosis).

*Centurus aurifrons dubius* RIDGWAY, Proc. U. S. Nat. Mus., iv, July 18, 1881, 108 (monogr.).

*Centurus dubius* BOUCARD, Proc. Zool. Soc. Lond., 1883, 452 (Buctzotz, Temax, Izamal, and Peto, Yucatan; habits).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Tunkas, Shkolak, Tekanto, and Labna, Yucatan).

*M[elanerpes] dubius* RIDGWAY, Man. N. Am. Birds, 1887, 293.

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Fifteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Four adult males from British Honduras.....	134.2	80	32.9	23.9	20.9
Ten adult males from Yucatan.....	132.9	79.5	31.9	23.3	19.7
FEMALES.					
Two adult females from British Honduras.....	127	77.8	30.3	21.5	19.3
Ten adult females from Yucatan.....	127.1	76.8	28.6	21.7	18.4
Three adult females from Campeche.....	127.3	75.3	26.2	22.2	18.5

- Melanerpes dubius* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 173, part (Buctotz, Temax, Peto, and Tabi, Yucatan; Cayo, San Felipe, Rio Mopan, and Belize, Brit. Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 422, part.—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 285 (Chichen-Itza, Yucatan).—COLE, Bull. Mus. Comp. Zool., i, 1906, 130 (Chichen-Itza).
- [*Melanerpes*] *dubius* SHARPE, Hand-list, ii, 1900, 211, part.
- Picus carolinensis* (not *Picus carolinus* Linnaeus) CABOT, App. Stephens' Trav. Yucatan, ii, 1848, 475 (Uxmal, Yucatan).
- [*Centurus*] *erythrophthalmus* LICHTENSTEIN, Nom. Mus. Berol., 1854, 76 (nomen nudum; coll. Berlin Mus.).
- [*Centurus*] *erythrophthalmus* REICHENBACH, Hand. Scansores, Picinae, 1854, 409, pl. 664, figs. 4396, 4397.
- Zebropicus erythrophthalmus* MALHERBE, Mon. Pict., ii, 1862, 243; iv, 1864, pl. 105, figs. 1, 2, 3.
- Centurus santacruzi* (not of Bonaparte) SCLATER and SALVIN, Ibis, 1859, 136, part. (Yucatan).
- Centurus albifrons* (not *Picus albifrons* Swainson) GRAY, List Birds Brit. Mus., Pict., 1868, 102.—CABANIS, Journ. für Orn., 1862, 324 (crit.).—NEHRKORN, Journ. für Orn., 1861, 69 (Yucatan; descr. eggs).—LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 205 (Mérida, Yucatan; crit.).—SALVIN, Cat. Strickland Coll., 1882, 399 (Guatemala).
- [*Centurus*] *albifrons* GRAY, Hand-list, ii, 1870, 198, no. 8768.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.
- Picus albifrons* (not of Swainson) SUNDEVALL, Consp. Av. Pict., 1866, 52, part ("Mexico").

### CENTURUS DUBIUS VERÆCRUCIS (Nelson).

#### VERA CRUZ WOODPECKER.

Similar to *C. d. dubius*, but slightly smaller, white bars on back, etc., slightly broader (or black bars narrower), under parts slightly darker and more strongly tinged with yellowish (especially on sides and upper abdomen) and red of abdomen more restricted, paler, and frequently inclining to orange-red;<sup>a</sup> adult female frequently with white markings on inner web of middle rectrices.<sup>a</sup>

*Adult male*.—Length (skins), 209–241 (224); wing, 122–133 (126.9); tail, 64–82 (74.4); culmen, 24.5–33.5 (29.9); tarsus, 21–24 (22.2); outer anterior toe, 18–20 (19.2).<sup>b</sup>

<sup>a</sup> These characters show, clearly, "intergradation" with *C. santa-cruzi grateloupensis*, as does also an occasional tendency in adult males to an interruption of the red pileum by an invasion of the supra-auricular gray on each side of the occiput, one specimen (no. 106,235, coll. Am. Mus. Nat. Hist., from Rio Givícia, Oaxaca) having a complete, though narrow, occipital band of gray; but I am disposed to consider the intermediates, which constitute a small minority of the specimens examined, as hybrids, as otherwise it would be very difficult to account for the existence of two conspecific forms, so different as are *C. d. veræcrucis* and *C. s. grateloupensis* in their typical state, in the same districts.

<sup>b</sup> Nineteen specimens.

*Adult female*.—Length (skins), 203–231 (213); wing, 118–134.5 (124.7); tail, 65–83.5 (72); culmen, 25–28.5 (26.5); tarsus, 19.5–23.5 (21.3); outer anterior toe, 17–19 (18.1).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Coatzacoalcos; Pasa Nueva; Tlalcotalpám; Playa Vicente; Sochiapa; San Juan; Orizaba), Oaxaca (Rio Givícia; Guichicovi; Túxtepec), Tabasco (Frontera; Atasta; Montecristo; San Juan Bautista), and Chiapas (Tila), and adjacent parts of Guatemala.

*Picus albifrons* (not of Swainson) SUNDEVALL, *Consp. Av. Picin.*, 1866, 52, part (Vera Cruz).

*Melanerpes dubius veræcrucis* NELSON, *Auk*, xvii, no. 3, July, 1900, 259 (Coatzacoalcos, Vera Cruz; coll. U. S. Nat. Mus.).

*Melanerpes santacruzi* (not *Centurus santacruzi* Bonaparte) SALVIN and GODMAN, *Biol. Centr.-Am.*, Aves, ii, 1895, 420, part (Playa Vicente and Sochiapa, Vera Cruz; crit. on p. 421).

[*Melanerpes*] *dubius* SHARPE, *Hand-list*, ii, 1900, 211, part.

### CENTURUS DUBIUS LEEI (Ridgway).

#### LEE'S WOODPECKER.

Similar to *C. d. dubius*, but under parts much darker (yellowish broccoli brown in unfaded specimens), rump and upper tail-coverts usually more or less (often heavily) barred with black, the adult male with whitish frontal band much narrower, sometimes obsolete; bill and feet averaging larger.

<sup>a</sup> Fourteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Three adult males from Guatemala.....	126	75.5	31.2	22.3	19
Six adult males from Tabasco.....	125.5	75.3	29.9	22.2	18.9
Three adult males from Oaxaca.....	128	72.8	28.7	22.7	19.5
Seven adult males from Vera Cruz.....	128	73.8	29.9	22	19.4
FEMALES.					
One adult female from Guatemala (locality not given).....	124	75.5	26.5	21	18.5
One adult female from Chiapas (Tila).....	124	73.5	28.5	20.5	18
Three adult females from Tabasco.....	120	67.7	26.5	20.7	18.3
Three adult females from Oaxaca.....	125.3	68.7	26.2	21.8	18
Six adult females from Vera Cruz.....	127	75	26.5	21.6	18

As might be expected, specimens from Tabasco, Chiapas, and Guatemala are not typical. They are intermediate in coloration between the birds from Vera Cruz and Oaxaca and those from Yucatan and Campeche, some of them nearer the latter; but they are even smaller than Vera Cruz and Oaxaca specimens, and therefore can not properly be referred to *C. d. dubius*.



*Adult male*.—Length (skins), 228–257 (245); wing, 129–133 (130.8); tail, 78–84 (82.1); culmen, 33.5–35.5 (34.4); tarsus, 23.5–25 (24.1); outer anterior toe, 19–21 (20.2).<sup>a</sup>

*Adult female*.—Length (skins), 218–240 (231); wing, 124.5–131 (127.7); tail, 75.5–84.5 (80.3); culmen, 30–32 (31.2); tarsus, 22.5–24.5 (23.2); outer anterior toe, 18.5–20.5 (19.6).<sup>b</sup>

Cozumél Island and Meco Island, Yucatan; Mugerés Island?

*Centurus leei* RIDGWAY, Proc. Biol. Soc. Wash., iii, Feb. 26, 1885, 22 (p. 3 of reprint) (Cozumel Island, Yucatan; coll. U. S. Nat. Mus.).

*Centurus dubius leei* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 36, Oct. 17, 1885, 561, 575 (descr.; crit.).

*M[elanerpes] leei* RIDGWAY, Man. N. Am. Birds, 1887, 293.

*Centurus dubius* (not *Picus dubius* Cabot) SALVIN, Ibis, 1885, 186, 192 (Cozumel I.; crit.); 1889, 369, part (Cozumel and Meco islands; crit.).

*Melanerpes dubius* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 172, part (Cozumel I.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 422, part.

[*Melanerpes*] *dubius* SHARPE, Hand-list, ii, 1900, 211, part (Cozumel I.).

### CENTURUS DUBIUS CANESCENS (Salvin).

#### RUATÁN WOODPECKER.

Similar to *C. d. dubius*, but upper parts more broadly barred with white (the white bars about as wide as the black interspaces), outer webs of primaries (except three outermost) spotted or barred with white, and size slightly larger.

*Adult female*.<sup>c</sup>—Length (skins), 234–239 (236.5); wing, 127–136 (130.3); tail, 76–79.5 (77.8); culmen, 30–31 (30.5); tarsus, 21–23 (22.2); outer anterior toe, 18.5–19 (18.8).<sup>d</sup>

Ruatán Island, Honduras.

*Centurus dubius?* (not *Picus dubius* Cabot) RIDGWAY, Proc. U. S. Nat. Mus., x, Aug. 6, 1888, 579 (Ruatan I., Honduras).

*Centurus canescens* SALVIN, Ibis, July, 1889, 370 (Ruatan I., Honduras; coll. Salvin and Godman).

*Melanerpes canescens* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 174 (Ruatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 423.

[*Melanerpes*] *canescens* SHARPE, Hand-list, ii, 1900, 211.

### CENTURUS RUBRIVENTRIS RUBRIVENTRIS Swainson.

#### SWAINSON'S WOODPECKER.

*Adult male*.—Postnasal region (frontlet), usually also loreal region, anterior portion of malar region, chin, and extreme upper portion of throat, chrome yellow to deep cadmium yellow or orange; forehead and anterior portion of superciliary region dull white; crown, occiput,

<sup>a</sup> Nineteen specimens.

<sup>c</sup> I have not seen the adult male of this form.

<sup>b</sup> Twenty specimens.

<sup>d</sup> Three specimens.

and hindneck bright red (between poppy red and carmine); back, scapulars, and upper rump narrowly barred with black and white, the white bars decidedly narrower than the black interspaces; lower rump and upper tail-coverts immaculate white, the longer of the latter sometimes with shaft partly black; tail black, the middle pair of rectrices with basal portion variously marked with white (mostly, sometimes wholly, concealed), the outermost pair usually narrowly margined terminally with white or with outer web narrowly barred or indented with the same and with the under surface more or less grayish or hoary; wings black, the coverts and secondaries narrowly barred with white, the basal portion of primaries spotted or blotched with white; sides of head (except anterior portion), including posterior portion of superciliary region, sides of neck, throat, and foreneck, plain pale buffy grayish, passing into deeper buffy grayish, or pale buffy grayish olive, on chest, breast, and sides; abdomen (superficially) bright poppy red; flanks and under tail-coverts dull white, more or less tinged with yellowish (sometimes with red also), barred with slate-blackish or dusky, the bars more or less V-shaped, especially on under tail-coverts; under wing-coverts white, barred or transversely spotted with black; inner webs of remiges (except terminal half, approximately, of primaries) broadly barred with white; bill dull black, more brownish on lower basal portion of mandible; legs and feet grayish dusky (bluish gray or greenish gray in life?); length (skins), 176–187 (181); wing, 103.5–110 (107); tail, 58.5–69 (63); culmen, 20.5–23 (21.6); tarsus, 17.5–20 (18.5); outer anterior toe, 14.5–16 (15.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crown dull smoky whitish, like forehead, passing into light buffy gray on occiput, the red of hindneck lighter and more orange-red or scarlet; length (skins), 165–182 (173); wing, 103.5–108 (105.5); tail, 58–66 (62.3); culmen, 18–20.5 (19.1); tarsus, 17–19 (17.9); outer anterior toe, 14–15.5 (14.8).<sup>a</sup>

Yucatan (Mérida; Temáx; Xbac; Peto; Chichen-Itza; La Vega; Puerto Morelos; San Felipe; Rio Lagarto). Bonaca Island, coast of Honduras? <sup>b</sup>

*Picus aurifrons* (not of Wagler) BONAPARTE, Proc. Zool. Soc. Lond., 1837, 116.

[*Centurus*] *aurifrons* BONAPARTE, Consp. Av., i, 1850, 119; Ateneo Italiano, ii, 1854, 126.

*Centurus rubriventris* SWAINSON, Anim. in Menag., 1838, 354 (no locality mentioned).—GRAY, List Birds Brit. Mus., Picidæ, 1868, 100.—LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 206 (Mérida, Yucatan; crit.); Ann. N. Y. Ac. Sci., ii,

<sup>a</sup> Ten specimens.

<sup>b</sup> I have not seen specimens from Bonaca Island. These should be different from the Yucatan bird.

- 1882, 247 (Mérida, Yucatan; crit.; descr. adult female).—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 102 (monogr.).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 452 (Mérida, Yucatan).—SALVIN, Ibis, 1889, 369, part (Yucatan; Bonaca I., Honduras?; crit.); 1890, 88 (Bonaca I.).
- C[enturus] rubriventris* GRAY, Gen. Birds, ii, 1846, 442.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 97 (diagnosis).
- Zebrapicus rubriventris* MALHERBE, Mon. Pict., ii, 1862, 248; iv, 1862, pl. 107, fig. 1.
- M[elanerpes] rubriventris* RIDGWAY, Man. N. Am. Birds, 1887, 293.
- Melanerpes rubriventris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 176, part (Mérida and Peto, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 417, part.—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 285 (Chichen-Itza, Yucatan).
- [*Melanerpes*] *rubriventris* SHARPE, Hand-list, ii, 1900, 211, part (Yucatan; Bonaca I.?).
- Melanerpes rubriventris* COLE, Bull. Mus. Comp. Zool., 1, 1906, 130 (Chichen-Itza).
- Centurus tricolor* (not *Picus tricolor* Wagler) CABANIS, Journ. für Orn., 1862, 327, part (in synonymy).
- Picus tricolor* (not of Wagler) SUNDEVALL, Consp. Av. Picin., 1866, 54, part.

### CENTURUS RUBRIVENTRIS PYGMÆUS Ridgway.

#### LESSER COZUMEL WOODPECKER.

Similar to *C. r. rubriventris* but decidedly smaller; color of under parts and sides of head darker; red of pileum usually more restricted, often interrupted by a light sooty grayish band across occiput; white on basal portion of middle rectrices more extensive, and white bars on back, etc., usually decidedly narrower.

*Adult male*.—Length (skins), 156–181 (172); wing, 95.5–101 (98); tail, 58–62.5 (60.3); culmen, 20–22 (21); tarsus, 17–20 (18.5); outer anterior toe, 14.5–16 (15.3).<sup>a</sup>

*Adult female*.—Length (skins), 155–178 (171); wing, 95–99.5 (96.7); tail, 57.5–61 (58.8); culmen, 18–20.5 (19.5); tarsus, 17.5–19 (18.3); outer anterior toe, 14–15.5 (14.9).<sup>b</sup>

Cozumel Island, Yucatan.

*Centurus rubriventris* (not of Swainson) SALVIN, Ibis, 1885, 186, 192 (Cozumel I., Yucatan; crit.; habits); 1889, 368, part (Cozumel I.; crit.).

*Melanerpes rubriventris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 176, part (Cozumel I.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 417, part.

[*Melanerpes*] *rubriventris* SHARPE, Hand-list, ii, 1900, 211, part (Cozumel I.).

*Centurus rubriventris pygmæus* RIDGWAY, Proc. U. S. Nat. Mus., viii, sig. 36, Oct. 17, 1885, 576 (Cozumel Island, Yucatan; coll. U. S. Nat. Mus.).

*M[elanerpes] pygmæus* RIDGWAY, Man. N. Am. Birds, 1887, 293.

<sup>a</sup> Ten specimens.

<sup>b</sup> Nine specimens.



## CENTURUS SUBELEGANS WAGLERI (Salvin and Godman).

## WAGLER'S WOODPECKER.

Similar to *C. s. subelegans*<sup>a</sup> but red of pileum more extensive, never(?) interrupted on occiput, and white bars on back, etc., averaging slightly broader.

*Adult male*.—Forehead and anterior portion of superciliary region dull brownish white, the latero-frontal antiæ more or less strongly tinged with yellow; crown and occiput bright poppy red, changing gradually to more orange-red on hindneck; back, scapulars, and upper rump rather broadly barred with black and white or yellowish white, the black bars slightly wider than the white ones; lower rump and upper tail-coverts white, usually immaculate, rarely with a few irregular narrow bars of blackish; tail black, the inner web of middle rectrices very broadly barred or transversely spotted with white, the outer web with transverse spots or a longitudinal streak of white; wing-coverts and secondaries black, broadly barred with white, the distal secondaries with the bars shortened into spots along the edge; primaries black (the outer and longer ones fading into dull slaty beyond their sinuated portion), spotted or otherwise marked basally with white, and narrowly tipped or terminally margined with the same; primary coverts and alulæ black, the outermost feathers of the latter edged or indented with white; sides of head (including broad superciliary stripe), sides and fore part of neck and lower throat light buffy grayish, gradually fading into paler (but not approaching white) on suborbital and malar regions, chin, and upper throat, gradually deepening into light buffy olive-grayish on chest, breast, sides, and upper abdomen; lower abdomen (superficially) bright poppy red; flanks and under tail-coverts dull yellowish white or very pale dingy yellowish broadly barred with black, the bars more or less V-shaped, at least on longer under tail-coverts; under wing-coverts white, irregularly barred with blackish; inner webs of remiges very broadly barred or transversely spotted with white, the terminal half or more of primaries uniform dark slate color; bill dull black, paler on under side of mandible, at least basally; legs and feet grayish dusky (greenish gray or bluish gray in life?); length (skins), 153–185 (167); wing, 105.5–119.5 (111.5); tail, 47.5–58 (52.8); culmen, 21.5–25.5 (23.7); tarsus, 18–20 (18.9); outer anterior toe, 15.5–18.5 (16.9).<sup>b</sup>

*Adult female*.—Similar to the adult male, but crown and occiput light buffy gray or hair brown, and red of hindneck paler and duller (usually more orange red); length (skins), 147–175 (151); wing,

<sup>a</sup> See page 52.

<sup>b</sup> Twenty specimens.

102-112 (106.9); tail, 44.5-56 (49.8); culmen, 18.5-22.5 (21); tarsus, 17-19.5 (18.2); outer anterior toe, 15.5-17 (16.4).<sup>a</sup>

*Young male*.—Similar to the adult male, but prefrontal region dull light yellowish or dull yellowish white, red of crown duller or less uniform, red of nape paler (frequently more orange-red), bars on back, etc., less sharply defined, the white ones tinged, more or less, with buffy, red of abdomen usually paler and more restricted, and chest sometimes narrowly and indistinctly streaked with dusky.

*Young female*.—Similar to the young male, but fore part of crown dull buffy whitish, shading into light buffy grayish on occiput, nape paler red, and red of abdomen still paler and more restricted.

Panamá (Colón, Lion Hill, Frijole, Paraiso, Panamá, Sabana de Panamá, Punta de Sabana, Rio Grande, and Obispo, eastern Panamá; El Banco, David, Castillo, Boquete, Divala, Chitra, Calovévora, Cordillera de Tolé, Santa Fe de Verágua, and Boquerón, western Panamá) and southwestern Costa Rica (Palmár; Legarto; Boruca; Paso Real; Pozo del Rio Grande; Pozo Azul de Pirrís; Rio Grande de Terraba; Buenos Aires); Caribbean coast of Colombia (Cartagena)?

<sup>a</sup> Twenty specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Six adult males from eastern Panama.....	112.8	53.9	24	18.8	17
Four adult males from western Panama.....	115.2	55.1	24.4	18.9	17.1
Ten adult males from Costa Rica.....	109.3	50.9	23.2	19	16.8
Ten adult males ( <i>C. seductus</i> ) from San Miguel Island.....	104.2	49.1	25	19.1	17.5
Ten adult males ( <i>C. s. sanctæ-martæ</i> ) from Santa Marta, Colombia.....	108.8	51.7	24.5	18.9	16.6
One adult male ( <i>C. s. neglectus</i> ) from Bogotá, Colombia.....	109	49.5	22	17.5	15.5
Ten adult males ( <i>C. s. subelegans</i> ) from Venezuela.....	108.5	53	24.2	18.4	16.2
Four adult males ( <i>C. s. subelegans</i> ) from Margarita Island.....	108.3	57.4	25	18.9	17.3
One adult male ( <i>C. s. subelegans</i> ) from Trinidad.....	111	57	25.5	20	16.5
Two adult males ( <i>C. s. subelegans</i> ) from Tobago.....	107.8	55.8	25.8	19.3	16.8
FEMALES.					
Five adult females from eastern Panama.....	108.9	51.3	22.4	18.4	16.5
Five adult females from western Panama.....	107.9	50.7	21.1	18.2	16.6
Ten adult females from Costa Rica.....	105.4	48.3	20.3	18.1	16.2
Eight adult females ( <i>C. seductus</i> ) from San Miguel Island.....	102.1	48.3	22.4	17.9	16.5
Ten adult females ( <i>C. s. sanctæ-martæ</i> ) from Santa Marta, Colombia.....	103.4	47.9	21.4	18	16
Three adult females ( <i>C. s. neglectus</i> ) from Bogotá, Colombia...	102	47	19	16.8	14.5
Five adult females ( <i>C. s. subelegans</i> ) from Venezuela.....	104	48.8	21.4	17.3	15.4
Two adult females ( <i>C. s. subelegans</i> ) from Margarita Island....	106	56.5	22.5	18.8	16.8
Two adult females ( <i>C. s. subelegans</i> ) from Tobago.....	104.3	52.5	21.3	18	16
One adult female ( <i>C. s. subelegans</i> ) from British Guiana.....	104	53	23.5	18	16

- P[icus] tricolor* (not of Gmelin) WAGLER, Isis, 1829, 512 ("Mexico," i. e., Cartagena, Colombia; see Cabanis, Journ. für Orn., 1862, 327).
- Centurus tricolor* CABANIS, Journ. für Orn., 1862, 327, part (Cartagena, Colombia; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 367 (Panama; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (Santa Fé de Veragua and Cordillera de Tolé, w. Panama); 1870, 213 (Calovevora, Castillo, and Chitra, w. Panama).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 47 (Palmár, Legarto, and Boruca, s. w. Costa Rica).—BANGS, Auk, xxiv, 1907, 287, in text (Rio Grande de Térraba, s. w. Costa Rica).
- [*Centurus*] *tricolor* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100, part (Panama).
- C[enturus] tricolor* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 97, part (Veragua, w. Panama).
- Melanerpes tricolor* HARGITT, Cat. Birds Brit. Mus., xviii, 1891, 174, part (Veragua, Panama, and Paraiso Station, Panama; "Central America").
- [*Centurus carolinus*] var. *tricolor* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 554, part ("Central America").
- Centurus subelegans* (not of Bonaparte) SCLATER, Proc. Zool. Soc. Lond., 1856, 143 (David, Chiriqui, w. Panama).
- Centurus rubriventris* (not of Swainson) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 299 (Lion Hill, Panama).
- (?) *Centurus rubricapillus*<sup>a</sup> CABANIS, Journ. für Orn., x, Sept., 1862, 328, in text (Baranquilla, Colombia; coll. Heine Mus.).
- Melanerpes wagleri* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 52, Jan., 1895, 416 (Lion Hill Station, Panama Railway; coll. Salvin and Godman).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 18 (Lion Hill; crit.); iii, 1902, 33 (Boquete, w. Panama, 4,000 ft.); Proc. Biol. Soc. Wash., xix, 1907, 107 (Pozo Azul de Pirris, s. w. Costa Rica); Auk, xxiv, 1907, 292 (Boruca, Paso Real, and Pozo del Rio Grande, Costa Rica).
- [*Melanerpes*] *wagleri* SHARPE, Hand-list, ii, 1900, 211, part (Panama).
- Melanerpes wagleri wagleri* THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1906, 216 (Sabana de Panama).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 587 (Costa Rica).
- Melanerpes subelegans wagleri* RICHMOND, Proc. U. S. Nat. Mus., xviii, Aug. 12, 1896, 668 (Chiriqui; Panama; coast of Colombia).
- Centurus wagleri* SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Punta de Sabana, Panama).

## CENTURUS SEDUCTUS (Bangs).

## SAN MIGUÉL WOODPECKER.

Similar to *C. subelegans wagleri*, but smaller, except bill, which is relatively larger and stouter; white bars or spots on inner webs of remiges narrower; postnasal feathers tinted with pale red instead of yellowish, and general color of under parts more ochraceous or vinaceous, sometimes tinged with red.

*Adult male*.—Length (skins), 161–179 (168); wing, 103–106 (104.2); tail, 46–53 (49.1); culmen, 22–26.5 (25); tarsus, 18.5–19.5 (19.1); outer anterior toe, 17–18 (17.5).<sup>b</sup>

<sup>a</sup> It is important that the types be carefully examined, for the name has priority over both *Melanerpes wagleri* and *C. s. sanctæ-martæ*.

<sup>b</sup> Ten specimens.



*Adult female*.—Length (skins), 145–171 (155); wing, 100–104.5 (102.1); tail, 46–51.5 (48.3); culmen, 21.5–23 (22.4); tarsus, 17–18.5 (17.9); outer anterior toe, 16–17 (16.5).<sup>a</sup>

San Miguel Island, Bay of Panamá.

*Malanerpes seductus* BANGS, Auk, xviii, Jan., 1901, 26 (San Miguel Island, Bay of Panama; coll. E. A. and O. Bangs).

*Melanerpes seductus* THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1905, 150 (San Miguel Island; crit.).

### CENTURUS HOFFMANNI Cabanis.

#### HOFFMANN'S WOODPECKER.

Most like *C. polygrammus frontalis* but much smaller, with tail relatively shorter; under parts decidedly darker and more yellowish gray, yellow of abdomen much deeper and much more extended, sub-basal portion of outer web of primaries much less heavily marked with white, lower rump and upper tail-coverts usually immaculate white, less white on middle rectrices, and adult male with red crown-patch larger and frequently confluent with the yellow or orange of nape.

*Adult male*.—Postnasal region pale cadmium or chrome yellow; forehead and anterior portion of superciliary region dull white, passing into light yellowish mouse gray or light drab-gray on supra-auricular region; crown bright poppy red, usually margined posteriorly by a more or less broad and distinct occipital band of light yellowish gray (confluent with the similar color of the supra-auricular region) but sometimes in contact with, or merging into, the bright cadmium yellow or orange (more rarely chrome yellow) of nape; back, scapulars, and upper rump regularly and sharply barred with black and white, the white bars averaging about 1.5–2 mm. in width and slightly narrower than the black ones; lower rump and upper tail-coverts white, usually immaculate; wings black, the coverts and secondaries conspicuously barred with white (the black interspaces broader than on back, etc.), the primaries spotted with white on sub-basal portion and (except outer quills) margined terminally with white; tail black, the middle pair of rectrices with inner web broadly barred or indented with white, the outer web with a longitudinal, usually wedge-shaped, streak of white on basal half (more or less), the two lateral pairs narrowly tipped or terminally margined with white, the outermost with distal portion of outer web barred or indented with white; auricular region, sides of neck, foreneck, chest, breast, and sides plain yellowish drab-gray fading into dull grayish, buffy white, or yellowish white on throat, chin, and malar region, and passing into bright saffron, indian, or cadmium yellow on abdomen; flanks and under tail-coverts dull

<sup>a</sup> Eight specimens.

yellowish white broadly barred with black, the bars more or less V-shaped on under tail-coverts; under wing-coverts white, rather narrowly barred with blackish; inner webs of remiges dull slate color or dusky, the greater part of secondaries and proximal portion of primaries with broad transverse spots of white; bill slate-black; feet dusky (olive-greenish in life); length (skins), 176–198 (186); wing, 116.5–125 (120); tail, 53–61.5 (57); culmen, 24–28 (26.3); tarsus, 20–21 (20.5); outer anterior toe, 17–19.5 (18.3).<sup>a</sup>

*Adult female*.—Similar to the adult male, but pileum without any red, the anterior portion of crown dull white, like forehead, passing into light smoke gray or drab gray on occiput, and nape usually lighter yellow (chrome yellow, more rarely cadmium yellow); length (skins), 170–190 (179); wing, 112–125.5 (117.8); tail, 50–60.5 (54.9); culmen, 22–26 (23.7); tarsus, 19–21 (19.6); outer anterior toe, 16.5–19 (17.6).<sup>b</sup>

*Young male*.—Similar to the adult male, but nape paler and duller yellow, prefrontal region dull pale yellow or dull whitish, bars on back, etc., less sharply defined, general color of under parts duller, chest (usually, at least) more or less streaked or flecked with dusky, and yellow of abdomen duller and more restricted.

Costa Rica (San José; Cartago; Grécia; San Mateo; San Pedro; Santo Domingo de San Mateo; Pigres; La Palma de Nicoya; Punta Arenas; Tenório; Bolsón; Cerro Santa Maria; Volcan de Miravalles; Bebedero; Alajuela; Escazú; Orosí; Carrillo; Guápiles; Guayabál; Guayabo; Bonilla; Juan Viñas) and Nicaragua (Grenada; León; Tres Granadas; Ometepe; Sucuyá; San Juan del Sur; San Gerónimo; Volcan de Chinandega; Virgen).

*Centurus hoffmannii* CABANIS, Journ. für Orn., x, Sept., 1862, 322 (Costa Rica; coll. Berlin Mus.?).—GRAY, List Birds Brit. Mus., Piciæ, 1868, 100.

*Centurus hoffmanni* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 131 (San José and Grecia, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 364 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 49 (San José, Cartago, and Punta Arenas, Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Anal. Mus. Nac. Costa Rica, i, 1887, 124 (San José; Cartago; Alajuela).—CHERRIE,

<sup>a</sup> Thirteen specimens.

<sup>b</sup> Eighteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Costa Rica.....	120.2	56.2	26.1	20.4	18.3
Three adult males from Nicaragua.....	119.2	59.7	26.7	20.5	18.3
FEMALES.					
Ten adult females from Costa Rica.....	119	55.4	23.8	19.6	17.3
Eight adult females from Nicaragua.....	116.3	54.3	23.6	19.6	17.9

Auk, ix, 1892, 327 (Costa Rica, both coasts and up to 6,500 ft.; descr. nest and eggs).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 267 (Guayabo, Costa Rica).

[*Centurus aurifrons*] var. *hoffmanni* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 554.

[*Centurus aurifrons*] ♂. *hoffmanni* RIDGWAY, Proc. U. S. Nat. Mus., iv, July 18, 1881, 97 (diagnosis).

*Centurus aurifrons hoffmanni* RIDGWAY, Proc. U. S. Nat. Mus., iv, July 18, 1881, 110 (monogr.); v, 1882, 501 (San José).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 399 (La Palma de Nicoya, Costa Rica); vi, 1883, 375, 387, 394 (San Juan del Sur, Sucuyá, and Omotepe, Nicaragua).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica).

[*Centurus*] *hoffmanni* GRAY, Hand-list, ii, 1870, 197, no. 8760.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.

*Picus hoffmanni* SUNDEVALL, Consp. Av. Picin., 1866, 54.

*Melanerpes hoffmanni* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 181 (San José; Punta Arenas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 419 (Leon, etc., Nicaragua; Costa Rican localities).—UNDERWOOD, Ibis, 1896, 443 (Volcan de Miravalles, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 587 (syn.; range in Costa Rica; habits).

[*Melanerpes*] *hoffmanni* SHARPE, Hand-list, ii, 1900, 211.

*Melanerpes aurifrons hoffmanni* LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Grenada, Nicaragua).

#### CENTURUS POLYGRAMMUS POLYGRAMMUS Cabanis.

##### OAXACA WOODPECKER.

Similar to *C. santacruxi grateloupensis*, but white bars on back, etc., averaging decidedly broader (or black bars narrower), inner web of middle rectrices with much more white, general color of under parts paler and grayer (less yellowish or fulvescent), the adult male usually with a broad gray occipital band, separating the red crown-patch from the yellow or orange-yellow nuchal area, as in *C. aurifrons*; differing from *C. aurifrons* in large amount of white (instead of none) on middle rectrices; back, etc., much more narrowly barred, color of chest, breast, etc., darker, and wing and tail averaging decidedly longer, the adult female usually with the nape more orange.

*Adult male*.—Prefrontal region cadmium yellow (more or less deep); forehead and anterior portion of superciliary region dull white, passing into light buffy smoke gray or light yellowish drab-gray on supra-auricular region, the latter color usually passing across occiput as a more or less well-defined band; center of crown bright poppy red, forming a roundish or ovoid patch, sometimes, however, continued over occiput where merging into the chrome or cadmium yellow, orange, or orange-red of nape, but usually separated from the yellow, orange, or orange-red nuchal area by an occipital band (more or less distinct) of light gray; back, scapulars, and upper rump narrowly, regularly, and very sharply barred with black and white, the white bars averaging about 1.5 mm. in width and very slightly narrower



than the black interspaces; lower rump and upper tail-coverts white, usually immaculate but sometimes with a greater or less number of narrow sagittate markings of black, the longer upper tail-coverts more often with a narrow shaft-streak of black; wings black, the coverts narrowly barred with white, the secondaries more broadly barred with the same; the primaries blotched on sub-basal portion with white, the inner quills margined terminally with the same; tail black, the inner web of middle pair of rectrices largely (usually mostly) white, with a greater or less number of broad bars or transverse spots of black, the outer web with a wedge-shaped streak of white on proximal portion, next to shaft; auricular region, sides of neck, chest, breast, and sides, plain light yellowish drab-grayish,<sup>a</sup> fading into paler (sometimes dull whitish) on upper throat, chin, and malar region and passing into saffron yellow on center of abdomen; flanks and under tail-coverts white, stained or washed, more or less, with yellowish, and rather broadly barred with black, the bars more or less V-shaped on under tail-coverts; bill dull black or slate-black; iris reddish;<sup>b</sup> legs and feet greenish gray <sup>b</sup> in life; length (skins), 218–250 (233); wing, 132–144 (138.9); tail, 74–85 (80.5); culmen, 28.5–33 (31); tarsus, 22.5–25 (23.8); outer anterior toe, 20.5–22.5 (21.2).<sup>c</sup>

*Adult female*.—Similar to the adult male, but without any red on crown, which shades from dull buffy white (like forehead) anteriorly to smoke gray on occiput, the nape chrome yellow to cadmium orange, and yellow of abdomen paler and more restricted; length (skins), 206–237 (223); wing, 129–138 (133.1); tail, 72.5–80 (76.5); culmen, 25–31 (27.2); tarsus, 21–23.5 (22.3); outer anterior toe, 18–20.5 (19.4).<sup>d</sup>

Southern Mexico, in State of Oaxaca (San Bartolomé; Tehuantepec; San Gerónimo; Santa Efigénia; Chicapa; Chimalapa; Chihuitán; Huilótepec; Juchitán; Santo Domingo; Sierra de Santo Domingo) and western Chiapas (Tonalá).

<sup>a</sup> The color is paler (light buffy grayish) in summer or worn plumage, darker (deep yellowish drab-gray to yellowish broccoli brown) in fresh plumage.

<sup>b</sup> Sumichrast, manuscript.

<sup>c</sup> Twelve specimens.

<sup>d</sup> Ten specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from Oaxaca.....	139.4	81.3	31.1	24	21.2
Two adult males, western Chiapas (Tonalá).....	136.7	80.5	30.5	22.7	21
FEMALES.					
Nine adult females from Oaxaca.....	132.9	76.5	27.3	22.5	19.6
One adult female from western Chiapas.....	135	73	26.5	21	18

*Centurus polygrammus* CABANIS, Journ. für Orn., Sept., 1862, 326 (San Bartolomo, Tehuantepec, Oaxaca; coll. Berlin Mus.); 1872, 157 (descr. adult male).—GRAY, List Birds Brit. Mus., Pictæ, 1868, 103.

[*Centurus*] *polygrammus* GRAY, Hand-list, ii, 1870, 198, no. 8773.

*M[elanerpes]* *polygrammus* NELSON, Auk, xvii, July, 1900, 259, in text.

(?) *Centurus albifrons* (not *Picus albifrons* Swainson) CABANIS, Journ. für Orn., 1862, 324 (crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 364 (near City of Mexico).

[*Centurus*] *albifrons* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100, part.

*Centurus aurifrons* (not *Picus aurifrons* Wagler) LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 35 (Chihuitan, Juchitan, and Santa Efigenia, Oaxaca).

[*Centurus aurifrons*] *β. santacruzi* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 97, part.

*Centurus aurifrons santa-cruzi* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 106, part (Chihuitan and Santa Efigenia, Oaxaca).

*M[elanerpes]* *santacruzi* RIDGWAY, Man. N. Am. Birds, 1887, 294, part.

[*Melanerpes aurifrons*] Subsp. *α. Melanerpes santacruzi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 179, part (Tonalá, Chiapas).

*Melanerpes santacruzi* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 420, part (Juchitan, Santa Efigenia, Chihuitan, Chimalapa, and Sierra de Santo Domingo, Oaxaca).

[*Melanerpes*] *santacruzi* SHARPE, Hand-list, ii, 1900, 211, part.

#### CENTURUS POLYGRAMMUS FRONTALIS (Nelson).

##### CHIAPAS WOODPECKER.

Similar to *C. p. polygrammus*, but smaller; bars on back, etc., broader (the white bars averaging about 2 mm. wide), rump and upper tail-coverts always conspicuously marked with black V-shaped or lunulate bars, and yellow of abdomen much paler and much more restricted; adult male with red crown-patch averaging decidedly smaller and always (?) separated from the orange-yellow to orange nuchal area by a distinct and continuous occipital band of light gray, the adult female with nape averaging lighter yellow (cadmium yellow or slightly paler). Similar also to *C. hoffmanni*, but much larger, with tail relatively longer, under parts paler and much grayer (less yellowish), yellow of abdomen very much paler (naples yellow or maize yellow instead of saffron, indian, or cadmium yellow) and much more restricted, sub-basal portion of outer webs of primaries much more heavily blotched with white, lower rump and upper tail-coverts always more or less barred or otherwise marked with black, and with much more white on middle rectrices.

*Adult male*.—Length (skins), 203–226 (218); wing, 131–136 (133.6); tail, 71–80 (74.4); culmen, 28–31 (29.2); tarsus, 21.5–23.5 (22.4); outer anterior toe, 18–22 (19.7).<sup>a</sup>

*Adult female*.—Length (skins), 200–224 (213); wing, 124.5–136 (130.6); tail, 66.5–81 (72.6); culmen, 23.5–29.5 (26.1); tarsus, 19–22 (21.3); outer anterior toe, 18–20 (18.7).<sup>a</sup>

<sup>a</sup> Ten specimens.

State of Chiapas (San Vicente; Chiapa; San Bartolomé; Juncaná; Tuxtla Gutierrez; Petapa; Comitán; Canjób), southern Mexico.

*Melanerpes frontalis* NELSON, Auk, xvii, July, 1900, 257 (San Vicente, Chiapas; coll. U. S. Nat. Mus.).

### CENTURUS AURIFRONS (Wagler).

#### GOLDEN-FRONTED WOODPECKER.

*Adult male*.—Postnasal region and anterior portion of forehead cadmium yellow, the former paler anteriorly; posterior portion of forehead and anterior portion of superciliary region dull buffy grayish white, passing into gray (nearly mouse gray) on supraauricular region and occiput, this enclosing a crown-patch of bright poppy red; hind-neck bright cadmium orange (sometimes tinged with orange-red) anteriorly, passing into yellow or yellowish orange posteriorly; back, scapulars, and upper rump regularly and sharply barred with black and white (the black bars averaging about 2.5–3 mm. in width, the white bars slightly narrower), the wing-coverts and secondaries similarly barred, but the white bars relatively narrower; primary coverts and primaries black, the latter with a white sub-basal patch and, except outermost quills, tipped with white; lower rump and upper tail-coverts immaculate white; tail black, the lateral rectrices tipped with white, the outermost pair with several white spots or indentations along edge of distal portion of outer web, sometimes with one or more similar spots or bars on subterminal portion of inner web; auricular region, sides of neck, chest, breast, and sides plain pale buffy grayish or very pale buffy drab-gray, fading into paler (sometimes dull whitish) on chin, anterior portion of malar region, and on loreal region, and passing into light yellow (pale cadmium or maize yellow) on abdomen; flanks and under tail-coverts white, spotted or barred with black, the markings usually of more or less V-shaped form; bill dull black or slate-black, usually paler on basal portion of gonys; legs and feet dusky grayish or olive (olive-greenish in life?); length (skins), 210–255 (234); wing, 129–143.5 (136.2); tail, 73–85 (79.8); culmen, 30–35 (33); tarsus, 22–25 (23.5); outer anterior toe, 17–20.5 (19.1).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without any red on head, the occiput and whole crown gray, the color fading from rather deep gray (nearly mouse gray or between mouse gray and gray no. 6) on occiput to pale buffy grayish or dull whitish on forehead, the yellow of hindneck rather paler than in male and, usually at least, without orange tinge, and yellow of abdomen paler, as well as more restricted; length (skins), 215–241 (225); wing, 127–134.5 (131.9);

<sup>a</sup> Forty specimens.



tail, 70.5–82 (76.9); culmen, 27–32.5 (30.4); tarsus, 21–25 (22.8); outer anterior toe, 18–20 (18.9).<sup>a</sup>

*Young male*.—Similar to the adult male, but much duller in coloration, the red crown-patch smaller and much less uniform in color, forehead and sides of pileum more or less barred with blackish, hind-neck paler and duller yellow, post-nasal region dull grayish buffy indistinctly barred with dusky (rarely somewhat yellowish), barring of back, etc., less sharply defined, and chest usually more or less streaked with dusky.

*Young female*.—Similar to the young male, but without any red on crown and with yellow of hindneck still paler and duller.

Northern and central Mexico, in States of Tamaulipas (Matamoras; Miér; Linares; Forlón; Victoria; Xicotencatl; Alta Mira; San Fernando; Rio de la Cruz; Tampico, May; Santa Fe de Presál; Camargo; Nuevo Laredo; Soto la Marina; Sierra Madre), Nuevo León (Monterrey; Rodríguez; Rio de Ramos; Montemorelos; Boque Negro; Cerralva; Hacienda de las Escobas; San Agustín), Coahuila (Rio Sabinas; Monclovia), eastern Chihuahua (Julines), Aguas Calientes (Chicalote; Calvillo), Guanajuato (Silao; Tupátaro), San Luis Potosí (Jesus Maria; Hacienda Angostura; Soledad; Ahualulco; Vallés), Hidalgo (Ismiquilipám; Tula), Mexico (near City of Mexico), Durango (Rio Sestín, 7,500 feet; Rancho Baillón, 7,800 feet; Las Bocas, 6,800 feet; Rosário, 7,500 feet; La Boquilla, 7,000 feet; Santuário, 7,000 feet; Cienega de las Vacas), Jalisco (Guadalajara; Ocotlán; Lagos), and Michoacán (Querendero;

<sup>a</sup> Thirty-two specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Texas.....	134	79.5	32.6	24.2	19.1
Ten adult males from Tamaulipas (8), Coahuila (1), and Hidalgo (1).....	134.3	78.9	33.3	23.1	19.2
Eight adult males from Durango.....	139.4	81.5	33.1	23.2	19.6
Two adult males from Jalisco.....	140	83.5	33	23.5	19
Four adult males from Michoacan.....	134.5	79	33.1	24	18.4
One adult male from Aguas Calientes.....	137	81	33.5	23.5	19.5
Two adult males from Guanajuato.....	141.7	80	33.2	23.7	18.7
Three adult males from San Luis Potosí.....	136.7	77.7	32.2	23.5	18.5
FEMALES.					
Ten adult females from Texas.....	130.7	76.2	30.2	23.5	19
Nine adult females from Tamaulipas (6), Nuevo Leon (2), and Hidalgo (2).....	131	76.9	29.4	22.6	18.8
Nine adult females from Durango.....	134.6	78.1	31.3	22.3	19.1
One adult female from Jalisco.....	133	79.5	32.5	23	18.5
One adult female from Aguas Calientes.....	131	74	29.5	23.5	18
Two adult females from San Luis Potosí.....	129.7	72.2	30.5	22.5	19

Patzcuaro; Morelia), and northward over greater part of Texas (north to Eastland County, west to Kendall, Tom Green, and Concho Counties).

*P[icus] aurifrons* WAGLER, Isis, 1829, 512 (Mexico; i. e. Ismiquilpám, Hidalgo<sup>a</sup>; coll. Berlin Mus.; ex Lichtenstein, manuscript).

*Picus aurifrons* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, 1; Journ. für Orn., 1863, 55 (reprint).—SUNDEVALL, Consp. Av. Picin., 1866, 53, part.

[*Centurus*] *aurifrons* BONAPARTE, Consp. Av., i, 1850, 119.—LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 76.—GRAY, Hand-list, ii, 1870, 198, no. 8770.—COUES, Key N. Am. Birds, 1872, 196.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.

[*Centurus*] *aurifrons* COUES, Key N. Am. Birds, 2d ed., 1884, 488.

*Centurus aurifrons* SCLATER, Cat. Am. Birds, 1862, 343 (n. Mexico).—CABANIS, Journ. für Orn., 1863, 323 (crit.).—GRAY, List Birds Brit. Mus., Picidae, 1868, 103.—DUGÈS, La Natureza, i, 1873, 139 (Guanajuato).—COOPER, Orn. Calif., 1870, 399 (Texas, etc.).—COUES, Check List, 1873, no. 307; 2d ed., 1882, no. 451.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 557, pl. 52, figs. 3, 6.—SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 39 (Hidalgo and Brownsville, Texas); v, 1879, 416 (Lomita Ranch, Texas).—MERRILL (J. C.), Proc. U. S. Nat. Mus., i, 1878, 151 (Ft. Brown, Texas; habits; descr. eggs).—RAGSDALE, Science News, i, no. 20, 1879, 320 (local distr. in Texas).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189; iv, 1881, 104 (monogr.); Nom. N. Am. Birds, 1881, no. 373.—BROWN (N. C.), Bull. Nutt. Orn. Club, vii, 1882, 40 (Boerne, Kendall Co., w. Texas, resident).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 342; Check List, 3d ed., 1910, 194.—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 165 (Rosario, etc., n. w. Durango, breeding; crit.).—LACEY, Auk, xxviii, 1911, 209 (Kerrville, Texas, resident).

[*Centurus aurifrons*] var. *aurifrons* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 554.

[*Centurus aurifrons*]  $\alpha$ . *aurifrons* RIDGWAY, Proc. U. S. Nat. Mus., iv, July 18, 1881, 97 (diagnosis).

*Zebrapicus aurifrons* MALHERBE, Mon. Pict., ii, 1862, 240; iv, 1862, pl. 104, figs. 1, 2, 3, 4.

*Melanerpes aurifrons* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 410.—LLOYD, Auk, iv, 1887, 191 (w. in Texas to Castle Mts., Tom Green Co., and n. to Texas and Pacific R. R.).—HANCOCK, Bull. Ridgw. Orn. Club, no. 2, 1887, 16 (Corpus Christi, Texas).—COOKE, Bird Migr. Miss. Val., 1888, 132 (Tom Green, Concho, and Kendall Counties, Texas).—BECKHAM, Proc. U. S. Nat. Mus., x, 1888, 665 (San Antonio, Leon Springs, Corpus Christi, and Beeville, Texas).—HASBROUCK, Auk, vi, 1889, 238 (Eastland Co., Texas; notes, etc.).—RAGSDALE, Auk, vii, 1890, 401 (Comal Co. w. to Medina R., n. e. to Colorado R. in San Saba Co., Texas; also, Brazos R. 40 m. from Red R.).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 177 (Hidalgo, Corpus Christi, Laredo, and San Antonio, Texas; Nuevo Laredo, Nuevo Leon; Soto la Marina and Sierra Madre near Victoria, Tamaulipas; Silao, Guanajuato; Morelia, Michoacan; City of Mexico; near Guadalajara, Jalisco).—JOURY, Proc. U. S. Nat. Mus., xvi, 1893, 785 (Ahualulco, Soledad, and Hacienda Angostura, San Luis Potosi, Oct.-Dec.).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 106 (Corpus

<sup>a</sup> See Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1895, 418.

- Christi).—ATTWATER, Auk, ix, 1892, 235 (San Antonio, resident).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 418 (Julines, Chihuahua; Ceralva, Hacienda de las Escobas, San Augustin, etc., Nuevo Leon; Aguas Calientes and Calvillo, Aguas Calientes; Silao, Guanajuato; etc.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 124.—PHILLIPS, Auk, xxviii, 1911, 75 (Matamoras, San Fernando, Alta Mira, and Rio de la Cruz, Tamaulipas).
- M[elanerpes] aurifrons* RIDGWAY, Man. N. Am. Birds, 1887, 294.
- [*Melanerpes*] *aurifrons* SHARPE, Hand-list, ii, 1900, 211.
- Centurus flaviventris* (not *Picus flaviventris* Vieillot)<sup>a</sup> SWAINSON, Anim. in Menag., 1837, 354 (no locality given).—WOODHOUSE, in Rep. Sitgreaves's Expl. Zuni and Col. R., 1853, 91 (San Antonio, Texas).—BAIRD, in Rep. Stansbury's Surv. Great Salt Lake, 1852, 333 (Texas); Rep. Pacific R. R. Surv., ix, 1858, 110; ed. 1860 (Birds N. Am.), atlas, pl. 42, figs. 1, 2; Rep. U. S. and Mex. Bound. Surv., ii, pt. ii, 1859, 5, pl. 4 (Eagle Pass and Ringgold Barracks, Texas; Matamoras, Tamaulipas); Cat. N. Am. Birds, 1859, no. 92.—HEERMANN, Rep. Pacific R. R. Surv., x, no. 1, 1859, 18 (San Antonio).—DRESSER, Ibis, 1865, 469 (n. e. to Guadalupe R., Texas).
- C[enturus] flaviventris* SCLATER, Proc. Zool. Soc. Lond., 1857, 8, in text (Texas).
- C[enturus] subelegans* (not of Bonaparte, 1837) GRAY, Gen. Birds, ii, 1846, 442.
- [*Centurus*] *subelegans* BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11), part (excl. syn.); Notes Orn. Coll. Delattre, 1854, 85.
- Picus subelegans* LESSON, Compl. Œuv. Buffon (Lévêque), xx, 1847, 206.
- Picus ornatus* LESSON, Rev. Zool., March, 1839, 102 (Mexico; coll. Abeillé.)
- C[enturus] ornatus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 410, pl. 664, figs. 4409, 4410.
- Centurus elegans* (not *Picus elegans* Swainson) LAWRENCE, Ann. Lyc. N. Y., v, 1852, 116 (Texas).—BAIRD, in Rep. Stansbury's Surv. Great Salt Lake, 1852, 333 (Rio Grande, Texas).
- Centurus santa-cruzi* (not of Bonaparte) LAWRENCE, Ann. Lyc. N. Y., v, 1852, 123 (w. Texas).
- Centurus santacruzi* BAIRD, in Rep. Stansbury's Surv. Great Salt Lake, 1852, 333 (w. Texas).
- P[icus] santa cruzi* SUNDEVALL, Consp. Av. Picin., 1866, 53, part (Texas).

### CENTURUS SANTACRUZI SANTACRUZI Bonaparte.

#### VELASQUEZ'S WOODPECKER.

*Adult male*.—Postnasal region cadmium yellow to cadmium orange, usually paler anteriorly; forehead and anterior portion of superciliary region dull white or buffy grayish white, passing into yellowish mouse gray or drab-gray on supra-auricular region; crown, occiput, and nape bright poppy red, passing into a more orange-red hue on hindneck, the posterior margin usually tinged or intermixed with orange-yellow; back, scapulars, and upper rump narrowly and very sharply barred with black and white, the white bars much narrower than the black interspaces, and averaging about 1–1.5 mm. in width; lower rump and upper tail-coverts white, usually immaculate but sometimes with shaft-streaks or irregular markings of black; wings black, the coverts and secondaries with narrow and

<sup>a</sup> = *Sphyrapicus ruber*.



distinct and (except on proximal secondaries) mostly interrupted bars of white, the primaries sometimes with a few small spots or irregular markings of white on sub-basal portion of outer web, the proximal quills usually margined terminally with white; tail black, the inner web of middle rectrices sometimes with a greater or less number of rather narrow bars or irregular markings of white (which do not extend to the shaft), the outer pair with a few narrow bars of white on terminal portion, mostly on outer web; auricular region, sides of neck, and foreneck plain yellowish smoke gray or drab-gray, fading into paler on upper throat, chin, and malar region, deepening posteriorly into deeper yellowish drab-gray or yellowish broccoli brown on chest, breast, and sides, this passing into saffron yellow or indian yellow on abdomen; flanks and under tail-coverts dull white, more or less tinged with yellowish, rather broadly barred with blackish, the bars on under tail-coverts more or less V-shaped; under wing-coverts broadly barred with white and slate-black, the bars of nearly equal width, but the blackish ones averaging rather broader than the white ones; inner webs of remiges blackish slate or dusky, the proximal portion with large transverse spots of white along edge; bill slate-black; iris orange to crimson; legs and feet olive-greenish in life; length (skins), 210-236 (225); wing, 124.5-142 (131.8); tail, 69-79 (72.5); culmen, 29-31.5 (30.1); tarsus, 21-23.5 (22.3); outer anterior toe, 18.5-21 (19.6).<sup>a</sup>

*Adult female*.—Similar to the adult male, but whole crown dull white or very pale yellowish mouse gray, like forehead, deepening into mouse gray on occiput; length (skins), 212-220 (216); wing, 122.5-141.5 (130.2); tail, 68-81 (72.3); culmen, 26-30 (27.8); tarsus, 21-23 (21.8); outer anterior toe, 17-20 (18.8).<sup>b</sup>

<sup>a</sup> Twelve specimens.<sup>b</sup> Ten specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Seven adult males ( <i>C. s. santacruzi</i> ) from Guatemala.....	132.4	72.6	30.1	22.2	19.8
Five adult males ( <i>C. s. santacruzi</i> ) from Chiapas (Huehuetán) ..	130	71.9	30.4	22.4	19.4
Twelve adult males ( <i>C. s. grateloupensis</i> ) from Vera Cruz .....	132.9	78.2	29.8	23.4	20
Ten adult males ( <i>C. s. pauper</i> ) from Honduras .....	123.7	69.2	27.4	21.2	18.7
One adult male ( <i>C. s. santacruzi</i> ) from northern Nicaragua (Jalapa).....	136.5	78.5	29.5	22	20
FEMALES.					
Nine adult females ( <i>C. s. santacruzi</i> ) from Guatemala.....	132.2	72.8	27.9	21.9	18.8
One adult female ( <i>C. s. santacruzi</i> ) from Chiapas (Huehuetan) ..	122.5	68.5	27	21.5	19
Seven adult females ( <i>C. s. grateloupensis</i> ) from Vera Cruz .....	129.1	75.9	26.9	21.8	18.9
Ten adult females ( <i>C. s. pauper</i> ) from Honduras .....	119.5	66.9	25.8	20.9	18.1

*Young male*.—Similar to the adult male, but barring of back, etc., less sharply defined, and that of flanks and under tail-coverts much less distinct, post-nasal region dull buffy whitish (instead of cadmium yellow or orange), red of pileum and nape less bright, less uniform, and yellow of abdomen much less distinct.

*Young female*.—Similar to the young male, but crown and occiput pale buffy grayish, the former more or less mottled or barred with dusky.

State of Chiapas (Huehuetán), southeastern Mexico, through Guatemala (Rio Manágua; Cobán to Chiséc; Palín; Goyabáj, Quitché; El Rancho, Zacapa; Patulúl, Sololá; Salamá; Gualán; El Rancho, Lake Amatitlan; Lake Atitlán; Los Amates, Yzabál; Iguana; Dueñas; San José; San Gerónimo; Naranjo; Retalhuleu; Santa Maria de Quezaltenango; Escuintla; El Baoul; Tolimán; Panajachál), and Salvador (San Salvador; El Libertad; Volcan de San Miguél) to northern Nicaragua (Jalapa).

*Centurus santa cruzi* BONAPARTE, Proc. Zool. Soc. Lond., 1837, 116 (Guatemala; coll. Velasquez); Nuov. Ann. Sci. Nat. Bologna, ii, 1839, 343.

*Centurus santa-cruzi* BONAPARTE, Consp. Av., i, 1850, 119 ("Mexico").—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 93 (El Rancho, on Lake Amatitlan, and Patulul, Solola, Guatemala; crit.).

[*Centurus*] *santacruz*i BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11) (excl. syn. *dubius* Cabot).

*Centurus santacruz*i SCLATER and SALVIN, Ibis, 1859, 136, part (Dueñas and Salamá, Guatemala; Yucatan?).—SCLATER, Cat. Am. Birds, 1862, 343, part (Salamá, Guatemala).

*Centurus santacruz*i OWEN, Ibis, 1861, 61 (San Geronimo, Guatemala; descr. eggs).

*Centurus santeruzzi* LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Palin and Naranjo, Guatemala).

*Centurus aurifrons santa-cruzi* RIDGWAY, Proc. U. S. Nat. Mus., iv, July 18, 1881, 106, part (Guatemala; monogr.).

[*Centurus aurifrons*] *β. santacruz*i RIDGWAY, Proc. U. S. Nat. Mus., iv, July 18, 1881, 97, part (Guatemala; diagnosis).

*P[icus] santa cruzi* SUNDEVALL, Consp. Av. Picin., 1866, 53, part (Guatemala).

*M[elanerpes] santa-cruzi* RIDGWAY, Man. N. Am. Birds, 1887, 294, part (Guatemala).

[*Melanerpes aurifrons*.] Subsp. *α. Melanerpes santacruz*i HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 179, part (Dueñas, Retalhuleu, and Raoul, Guatemala).

*Melanerpes santacruz*i SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 420, part (Santa Maria de Quezaltenango, Salamá, San Gerónimo, Retalhuleu, Escuintla, El Baoul, Dueñas, Toliman, and Panajachel, Guatemala; Volcan San Miguel and La Libertad, Salvador.)

[*Melanerpes*] *santacruz*i SHARPE, Hand-list, ii, 1900, 211, part (Guatemala).

*Centurus santa-cruzi pauper* (not of Ridgway) DEARBORN, Pub. 125, Field Mus. N. H., 1907, 93 (Los Amates, Yzabal, Guatemala; crit.).

*Melanerpes santacruz*i *fumosus* NELSON, Auk, xvii, July, 1900, 258 (Huehuetan, Chiapas; coll. U. S. Nat. Mus.).

*Centurus santa-cruzi fumosus* DEARBORN, Pub. 125, Field Mus. N. H., Nov., 1907, 94 (San José, Guatemala; crit.).

## CENTURUS SANTACRUZI GRATELOUPENSIS (Lesson).

## LESSON'S WOODPECKER.

Similar to *C. s. santacruzi*, but general color of underparts and sides of head averaging paler, forehead averaging more purely white, and white bars on upper parts usually relatively broader. [Somewhat like *C. aurifrons*, but back, etc., much more narrowly barred, no gray band across occiput, hindneck bright orange-red (confluent with red of crown), postnasal region deep orange to orange-red, general color of underparts much darker and more olive or brownish, yellow of abdomen more saffron, white markings on subbasal portion of primaries much more restricted, and inner web of middle rectrices with more or less of white.]

*Adult male*.—Length (skins), 220–240 (230); wing, 129–136.5 (132.9); tail, 75–80 (78.2); culmen, 27–33 (29.8); tarsus, 22–25.5 (23.4); outer anterior toe, 19–21.5 (20).<sup>a</sup>

*Adult female*.—Length (skins), 210–234 (218); wing, 124–134.5 (129.1); tail, 72.5–81 (75.9); culmen, 25.5–28 (26.9); tarsus, 21–23 (21.8); outer anterior toe, 18.5–19.5 (18.9).<sup>b</sup>

Eastern Mexico, in States of Tamaulipas (Alta Mira; Tampico), Vera Cruz (Las Vigas; Jalapa; Coátepec; Misantla; Cuesta de Misantla; Vega de Casadero; Atoyac; Córdoba; Jomotla; Rio Santa Ana; Plan del Rio; Huatusco; Cuichapa; Zentla; Rio Rancho Nuevo; Hacienda Tortugas; Vera Cruz; Orizaba; Miradór; Sochiapa; Playa Vicente; Antigua; Papantla; Medellín; Motzorongo; Tlalcotalpám), Puebla (Metlatoyuca), and Oaxaca (Rincón Antonio; Santo Domingo).

*Picus gratelopensis* LESSON, Rev. Zool., 1839, 41 (Mexico).—WAGNER, Wiegmann's Archiv für Naturg., 1841, 100.

[*Centurus*] *grateloupensis* BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11) (excl. syn.).

*Centurus santacruzi* (not of Bonaparte) SCLATER, Proc. Zool. Soc. Lond., 1856, 307 (Cordova, Vera Cruz; crit.); 1859, 367 (Jalapa, Vera Cruz); 1864, 177 (near City of Mexico); Cat. Am. Birds, 1862, 343, part (s. Mexico).

[*Centurus*] *santa cruzi* GRAY, Hand-list, ii, 1870, 198, no. 8769 (excl. syn. part).

*Centurus santacruzii* BAIRD, in Rep. Stansbury's Surv. Gt. Salt Lake, 1852, 333 (western Texas).

[*Centurus aurifrons*] *β. santacruzi* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 97, part (s. Mexico).

*Centurus aurifrons santa-cruzi* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 106, part (s. Mexico).

*Zebrapicus santa-cruzi* MALHERBE, Mon. Pucid., ii, 1862, 241, part; iv, 1862, pl. 105, figs. 4, 5.

*M[elanerpes] santa-cruzi* RIDGWAY, Man. N. Am. Birds, 1887, 294, part (Jalapa and Mirador, Vera Cruz).

[*Melanerpes aurifrons*.] Subsp. *α. Melanerpes santacruzi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 179, part (Tampico, s. Tamaulipas; San Juan del Rio, Vera Cruz, Atoyac, Misantla, Jomotla, Rio Santa Ana and Plan del Rio near Jalapa, Huatusco, Cuichapa near Cordova, and Coatepec, Vera Cruz).

<sup>a</sup> Ten specimens.

<sup>b</sup> Seven specimens.



- Melanerpes santacruzi* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 420, part (Tampico, s. Tamaulipas; Las Vigas, Jalapa, Coatepec, Misantla, Cuesta de Misantla, Vega del Casadero, Atoyac, Cordova, Jomotla, Santana, Plan del Rio, Huatusco, Cuichapa?, Zentla, Rio Rancho Nuevo, Hacienda Tortugas, Vera Cruz, Orizaba, Sochiapa, and Playa Vicente, Vera Cruz).
- C[enturus] erythrophthalmus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 409, pl. 664, figs. 4407, 4408 (Santuario and Jalapa, Vera Cruz; coll. Berlin Mus.; ex. Lichtenstein, manuscript).
- Centurus flaviventris* (not of Swainson) SCLATER, Proc. Zool. Soc. Lond., 1860, 252 (Vera Cruz).
- Centurus albifrons* (not of Swainson) SCLATER, Proc. Zool. Soc. Lond., 1869, 364 (near City of Mexico; crit.).
- P[icus] santa cruzi* SUNDEVALL, Consp. Av. Picin., 1866, 53, part (s. Mexico).
- [*Melanerpes*] *santacruzi* SHARPE, Hand-list, ii, 1900, 211, part (s. Mexico).
- Centurus aurifrons* (not *Picus aurifrons* Wagler) SUMICHRAST, La Naturaleza, v, 1882, 240 (Orizaba, etc., Vera Cruz).

### CENTURUS SANTACRUZI PAUPER Ridgway.

#### TRUXILLO WOODPECKER.

Similar to *C. s. santacruzi*, but smaller, and with white bars on back, etc., usually still narrower.

*Adult male*.—Length (skins), 195–218 (209); wing, 117.5–131 (123.7); tail, 63–77 (69.2); culmen, 25–30 (27.4); tarsus, 20–23.5 (21.2); outer anterior toe, 17–20 (18.7).<sup>a</sup>

*Adult female*.—Length (skins), 195–218 (207); wing, 115.5–123 (119.5); tail, 62–71.5 (66.9); culmen, 24–27 (25.8); tarsus, 20–22 (20.9); outer anterior toe, 17–19 (18.1).<sup>a</sup>

Caribbean slope of Honduras (Truxillo; San Pedro; San Pedro Sula; Céiba; Omoa; Chaloma; Comayagua). British Honduras (Belize)?

*Centurus santacruzi* (not of Bonaparte) SCLATER, Proc. Zool. Soc. Lond., 1858, 359 (Comayagua, Honduras).—SCLATER and SALVIN, Ibis, 1859, 136, part (Comayagua); 1870, 837 (Julian and San Pedro, Honduras).—MOORE, Proc. Zool. Soc. Lond., 1859, 60 (Omoa, Honduras).—TAYLOR, Ibis, 1860, 119 (Honduras; habits).

[*Centurus aurifrons*] *β. santacruzi* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 97, part (Honduras).

*Centurus aurifrons santa-cruzi* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 106, part (Honduras; monogr.).

*M[elanerpes] santa-cruzi* RIDGWAY, Man. N. Am. Birds, 1887, 294, part (Honduras).

[*Melanerpes aurifrons*.] Subsp. *α. Melanerpes santacruzi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 179, part (Julian and San Pedro, Honduras).

*Melanerpes santacruzi* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 420, part (Julian, San Pedro, Truxillo, Omoa, and Comayagua, Honduras).

[*Melanerpes*] *santacruzi* SHARPE, Hand-list, ii, 1900, 211, part (Honduras).

*Centurus santacruzi pauper* RIDGWAY, Proc. U. S. Nat. Mus., x, sig. 37, Aug. 6, 1888, 582 (Truxillo, Honduras; coll. U. S. Nat. Mus.).

<sup>a</sup> Ten specimens.

- (?) *Centurus santa-cruzi pauper* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 93, part (Belize, Brit. Honduras; crit.).  
*Centurus santacruzi paupera* LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Chaloma, Honduras).  
*Melanerpes santacruzi pauper* BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 146 (Ceiba, Honduras).

### CENTURUS CHRYSOGENYS CHRYSOGENYS (Vigors).

#### GOLDEN-CHEEKED WOODPECKER.

*Adult male*.—Forehead (narrowly) pale buffy brown or pale wood brown; crown and occiput bright red (between poppy red and carmine); hindneck bright chrome or cadmium, passing into a more orange-red hue on nape, the latter into orange or orange-yellow on lower portion or along posterior edge; a large superciliary patch of black, this sometimes entirely encircling the bare orbital space, but much broader above and behind; prefrontal region rather dull cadmium yellow or orange, or sometimes nearly concolor with forehead; back, scapulars, and upper rump barred with black and white, the two colors about equal in width; lower rump and upper tail-coverts white, barred with black; wing black, the coverts more narrowly, the secondaries more broadly barred with white, the primaries extensively blotched with white sub-basally and tipped or terminally margined with the same; tail black, the middle pair of rectrices broadly barred with white, the outer pair more narrowly barred, the terminal half (more or less) of the next similarly barred, the other rectrices with inner webs usually barred or spotted along the edge with white; malar and auricular regions (sometimes chin also) cadmium or chrome yellow (more or less deep); throat, foreneck, sides of neck, chest, breast, and sides plain deep drab-gray or hair brown; abdomen (superficially) saffron yellow (more or less deep); flanks and under tail-coverts dull white barred with black, the bars more or less V-shaped; under wing-coverts white, rather narrowly barred with black; inner webs of primaries extensively blotched with white sub-basally, the inner webs of secondaries broadly barred or transversely spotted with white; bill dull black, more brownish on lower basal portion of mandible; legs and feet grayish dusky (greenish gray or olive in life?); length (skins), 204–223 (210); wing, 118–124.5 (121.3); tail, 71.5–77 (74.1); culmen, 25–28 (26.6); tarsus, 20.5–23 (21.6); outer anterior toe, 17.5–19.5 (18.9).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crown and occiput brownish gray (more brownish or buffy anteriorly), the occiput sometimes intermixed with black, rarely nearly uniform black, the nape varying from orange to orange-red; length (skins), 194–211 (202); wing

<sup>a</sup> Ten specimens (seven from Sinaloa, three from Tepic).

114–123.5 (119.4); tail, 67–77.5 (72.8); culmen, 23.5–25.5 (24.7); tarsus, 20–21.5 (20.7); outer anterior toe, 17–19 (18.1).<sup>a</sup>

*Young male*.—Similar to the adult male, but texture of plumage more lax, abdomen but faintly, if at all, tinged with yellow, and red of crown usually duller.

*Young female*.—Similar to the young male, but without red on crown.

Western Mexico, in States of Sinaloa (Mazatlán; Quimiches; Rosário; Quotla; Escuinapa; Los Píeles, 3,000–3,500 feet; Rio Juana Gomez, 50 feet) and Sonora (southern portion) and Territory of Tepic (San Blas; Santiago).

*Zebrapicus elegans* (not *Picus elegans* Müller, 1776, nor Swainson, 1827) MALHERBE, Mon. Pict., ii, 1862, 225, part, pl. 102, fig. 6 (female).

*Picus elegans* FINSCH, Abh. Nat. ver. Brem., 1871, 356 (Mazatlan, Sinaloa).

*Centurus elegans* LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 294 (Mazatlan; Tepic; Sonora; habits; descr. nest and eggs).—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 114, part (Mazatlan; monogr.).—MILLER (W. de W.), Bull. Am. Mus. N. H., xxi, 1905, 352 (Escuinapa, etc., s. Sinaloa; crit.).—BAILEY (H. H.), Auk, xxiii, 1906, 388 (San Blas, Tepic).

*M[elanerpes] elegans* RIDGWAY, Man. N. Am. Birds, 1887, 292, part.

*Melanerpes elegans* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 184, part (Sonora; Mazatlan; San Blas, Tepic).

[*Melanerpes*] *elegans* SHARPE, Hand-list, ii, 1900, 212.

*Picus chrysogenys* VIGORS, Zool. Beechey's Voy., 1839, 24 (no locality given, but without doubt Mazatlan, Sinaloa, or San Blas or Tepic, Tepic *δ*).

*Centurus chrysogenys chrysogenys* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 32, footnote.

<sup>a</sup> Ten specimens (nine from Sinaloa, one from Tepic).

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males ( <i>C. c. chrysogenys</i> ) from Sinaloa (9) and Tepic (1).....	121.3	74.1	26.6	21.6	18.9
Eight adult males from Guerrero ( <i>C. c. flavinuchus</i> ).....	125.3	71.7	27.6	21.4	19.8
Six adult males from Colima ( <i>C. c. flavinuchus</i> ).....	120.7	67.2	27.6	21.6	19.2
One adult male from Michoacan ( <i>C. c. flavinuchus</i> ).....	122	68	27.5	21	19
One adult male from Jalisco ( <i>C. c. flavinuchus</i> ).....	126.5	68	28	22	20
FEMALES.					
Ten adult females ( <i>C. c. chrysogenys</i> ) from Sinaloa (7) and Tepic (3).....	119.4	72.8	24.7	20.7	18.1
Four adult females from Guerrero ( <i>C. c. flavinuchus</i> ).....	121.6	70.2	26.4	20.8	18.2
Six adult females from Colima ( <i>C. c. flavinuchus</i> ).....	120.5	68.4	24.5	20.1	17.9
Three adult females from Michoacan ( <i>C. c. flavinuchus</i> ).....	120	66.6	26.8	20.7	19

<sup>b</sup> The only Mexican localities visited by the naturalists of the "Blossom" are Acapulco, Guerrero; Mazatlan, Sinaloa; and San Blas and Tepic, in the Territory of Tepic. The bird found at Acapulco is *C. c. flavinuchus*, hence the type locality of *C. c. chrysogenys* must be either Mazatlan or one of the two Tepic localities.



## CENTURUS CHRYSOGENYS FLAVINUCHUS Ridgway.

## ACAPULCO WOODPECKER.

Similar to *C. c. chrysogenys*, but adult male with nape bright orange-yellow (cadmium yellow to orange), strongly (often abruptly) contrasted with red of occiput and crown, frontal area averaging broader and paler, yellow of malar region, etc., averaging much paler, the adult female with nape orange-yellow instead of reddish orange or orange-red; wing and tail averaging longer, tail shorter.

*Adult male*.—Length (skins), 184–233 (210); wing, 118–128.5 (123.5); tail, 61.5–76.5 (69.5); culmen, 26.5–30.5 (27.6); tarsus, 20.5–22 (21.5); outer anterior toe, 18–20.5 (19.5).<sup>a</sup>

*Adult female*.—Length (skins), 186–213 (203); wing, 118–125.5 (120.7); tail, 65–73 (68.6); culmen, 23.5–30 (25.6); tarsus, 19–22 (20.4); outer anterior toe, 17.5–20 (18.3).<sup>b</sup>

South-central and southwestern Mexico, in States of Puebla (Izucár de Matamoras; Epatlán), Morelos (Punta de Íxtla), Jalisco (Hacienda San Marcos; Beltrán; Tuxpán; Las Camas; Volcan de Nieve), Michoacán (near Ahuacana; La Salada; La Playa, Volcan de Jorulla), Colima (Hacienda Nogueres; Plains of Colima; Manzanillo; Rio de la Coahuayana; Colima), Guerrero (El Limón; Acapulco; Iguala; Dos Arroyos), and western Oaxaca (Putla).

*Picus elegans* (not of Müller, 1776 <sup>c</sup>) SWAINSON, Philos. Mag., n. s., i, no. 6, June, 1827, 439 ("Maritime land" [of Mexico] = adult male).—LESSON, Compl. Buff., ix, 1837, 318.—SUNDEVALL, Consp. Av. Picin., 1866, 55 ("Mexico").

*P[icus] elegans* WAGLER, Isis, 1829, 514.

*Centurus elegans* GRAY, Gen. Birds, ii, 1846, 442.—REICHENBACH, Handb. Scausores, Picinæ, 1854, 411.

*[Centurus] elegans* BONAPARTE, Consp. Av., i, 1850, 119; Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11).—GRAY, Hand-list, ii, 1870, 197, no. 8763.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101.

*Centurus elegans* BAIRD, in Stansbury's Rep. Gt. Salt Lake, 1852, 333 (Mexico); Ibis, 1863, 476 (Colima).—CABANIS, Journ. für Orn., 1862, 327 (Acapulco, Guerrero; crit.).—(?)SCLATER, Cat. Am. Birds, 1862, 342 ("Mexico").—(?)GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 101 ("Mexico").—SALVIN, Cat. Strickland Coll., 1882, 399; Proc. Zool. Soc. Lond., 1883, 425 (Acapulco).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 160 (Izucar de Matamoras, Puebla).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 218 (La Playa, Volcan de Jorulla, Michoacan).

*Zebrapicus elegans* MALHERBE, Mon. Pict., ii, 1862, 225; iv, 1862, pl. 102, fig. 5 (male).

*M[elanerpes] elegans* RIDGWAY, Man. N. Am. Birds, 1887, 292, part.

*Melanerpes elegans* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 184, part (Putla, Oaxaca; Beltran and Hacienda San Marcos, Jalisco; Plains of Colima; Acapulco and Dos Arroyos, Guerrero; Epatlan, Puebla).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 424, part (Beltran, etc., Jalisco; Plains of Colima; La Playa, Michoacan; Acapulco, etc., Guerrero; Izucar de Matamoras, etc., Puebla).

*[Melanerpes] elegans* SHARPE, Hand-list, ii, 1900, 212.

*Centurus chrysogenys flavinuchus* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 32 (Acapulco, Guerrero; coll. U. S. Nat. Mus.).

<sup>a</sup> Sixteen specimens.    <sup>b</sup> Thirteen specimens.    <sup>c</sup> = *Celeus elegans* (Müller).

## CENTURUS HYPOPOLIUS (Wagler).

## GRAY-BREASTED WOODPECKER.

*Adult male*.—Forehead varying from dull white, more or less tinged with pale smoke-gray, to pale drab or drab-gray; anterior and middle portions of crown bright poppy red, this sometimes restricted to a central spot; a rather ill-defined orbital ring of bluish black, broader above eye, this sometimes inclosing a narrow line of white on lower eyelid and posterior portion of upper eyelid; lateral and posterior parts of crown, occiput, hindneck, and sides of neck plain drab to deep purplish drab or deep grayish hair brown, the auricular region similar but rather paler, the lower portion more or less distinctly tinged with red; chin, throat, chest, breast, abdomen, and sides plain drab-gray (more or less deep); flanks, thighs, lower abdomen, anal region, and under tail-coverts white (sometimes tinged with pale yellowish anteriorly) broken by broad V-shaped bars or marks of slate-blackish; back and scapulars barred with black and whitish, the bars of the latter rather narrower than the black ones and more or less tinged with dull yellowish or pale drab; wing-coverts and secondaries black, barred with white, the white bars broader on greater wing-coverts and secondaries, especially that on tips of the latter; primaries black, spotted or blotched subbasally (except on the four outermost) and narrowly tipped with white; rump and upper tail-coverts white, broken by more or less distinct mesial or central streaks or spots (usually cuneate or sagittate) of black; tail black, the middle pair of rectrices with basal half, or more, mostly white, transversely spotted or otherwise variegated with black, the two lateral pairs margined terminally and serrated along edge of outer web with white; bill dusky, the maxilla more blackish, the mandible more horn colored; iris brown; legs and feet dusky grayish (bluish gray in life?); length (skins), 199–214 (207); wing, 116.5–131 (124.1); tail, 74–83.5 (80); culmen, 23–26 (24.2); tarsus, 18–22 (20.5); outer anterior toe, 15–17.5 (16.6).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without any red on crown; length (skins), 203–209 (206); wing, 118.5–125.5 (122.8); tail, 80–86.5 (83.4); culmen, 23–25.5 (24); tarsus, 18.5–20.5 (19.4); outer anterior toe, 14.5–16.5 (15.3).<sup>b</sup>

Southern Mexico, in States of Puebla (Tehuacán; Tecuapán; Huehuetán; Chapulco; Izucár de Matamoras; Chietla; San Miguel Molino; San Bartólo; Epatlán), Mexico (Valley of Mexico), Morelos (Cuernavaca), Guerrero (Sierra Madre del Sur), and Oaxaca (Oaxaca City; Cuicatlán).

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<sup>a</sup> Seven specimens.<sup>b</sup> Four specimens.

*P[icus] hypopolius* WAGLER, Isis, 1829, 514 ("Mexico;"<sup>a</sup> coll. Berlin Mus.).

*Picus hypopolius* SUNDEVALL, Consp. Av. Picin., 1866, 55.

*Zebrapicus hypopolius* MALHERBE, Mém. Acad. Metz, xxx, 1849, 361; Mon. Pucid., ii, 1862, 228; iv, 1862, pl. 103, figs. 4, 5.

[*Centurus*] *hypopolius* BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11).—REICHENBACH, Handb. Scansores, Picinæ, 1854, 410, pl. 665, figs. 4413, 4414.—LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 76.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.

*Centurus hypopolius* CABANIS, Journ. für Orn., 1862, 329 (crit.).—SCLATER, Proc. Zool. Soc. Lond., 1874, 176 (in text).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 35 (Chapulco, Puebla).—SUMICHRIST, La Naturaleza, v, 1881, 240 (Chapulco and Tehuacan, Puebla).—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 113 (monogr.).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 160 (Huehuetan and Izucar de Matamoras, Puebla).

[*Centurus*] *hypopolius* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 98 (diagnosis).

[*Melanerpes*] *hypopolius* RIDGWAY, Man. N. Am. Birds, 1887, 292.

*Melanerpes hypopolius* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 186 (Valley of Mexico; Chietla, San Bartolo, Izucar, and San Miguel Molino, Puebla; Sierra Madre del Sur).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 425 (Tehuacan, Tecuapan, Huehuetlan, Izucar de Matamoras, San Miguel Molino, Chietla, San Bartolo, Epatlan, and Chapulco, Puebla; Sierra Madre del Sur, Guerrero).

[*Melanerpes*] *hypopolius* SHARPE, Hand-list, ii, 1900, 212.

#### CENTURUS UROPYGIALIS UROPYGIALIS Baird.

##### GILA WOODPECKER.

*Adult male*.—Head, neck, and most of under parts plain drab, grayish drab or buffy drab,<sup>b</sup> darkest on hindneck, palest on chin, forehead, and nasal tufts; crown with a broad median patch of bright poppy red or scarlet vermilion; back, scapulars, and upper rump regularly, sharply, and rather broadly barred with black and white, the white bars, which are usually tinged with pale brownish buffy, averaging about 2–2.5 mm. wide and, usually, slightly narrower than the black ones; lower rump and upper tail-covers white, barred (sometimes narrowly) with black, those on upper tail-coverts usually more or less V- or brace-shaped; tail black, the inner web of middle pair of rectrices white (except terminally) broadly barred with black, the outer web with a wedge-shaped streak of white, extending for proximal half or more, the outermost pair crossed for most of their length by broad, interrupted, bars of white, the next pair with similar markings on distal portion; wings black, the coverts and secondaries barred with pure white (the bars narrower on coverts, much broader on secondaries), the primaries with a large, more or less broken, patch of white on subbasal portion of outer webs, the inner (proximal) quills with a terminal spot or terminal edging of

<sup>a</sup> According to Cabanis (Journ. für Orn., 1862, 329), Wagler's specimens were from Tehuacan and Tecuapan, Puebla.

<sup>b</sup> The color deeper and more drab in fresh plumage, paler and more buffy in worn summer plumage.



white; abdomen light saffron yellow; flanks and under tail-coverts dull white or yellowish white, barred with black, the bars usually somewhat V-shaped, at least on coverts; bill dull black or slate-black; legs and feet dusky greenish (olive-green or grayish green in life?); length (skins), 207–251 (225); wing, 125–140 (131.1); tail, 72.5–88 (81); culmen, 28–35 (30.3); tarsus, 22–25 (22.8); outer anterior toe, 18–20.5 (19.1).<sup>a</sup>

*Adult female*.—Similar to the adult male but no red spot on crown, which is wholly light drab (like general color of head, neck, and under parts), and yellow of abdomen paler and more restricted; length (skins), 195–224 (214); wing, 120.5–134 (128); tail, 62–83 (73); culmen, 24.5–29 (26.4); tarsus, 20.5–23 (21.6); outer anterior toe, 17–19 (18).<sup>b</sup>

*Young male*.—Similar to the adult male but general color of head, neck, and under parts rather paler and more grayish, red crown-spot smaller and much duller red, and back more or less tinged or washed with pale buffy grayish brown, the bars also less sharply defined than in adults.

*Young female*.—Similar to the young male but crown without any red.

Northwestern Mexico, in States of Sonora (Fronteras; Hermosillo; Álamos; Batamotál; Camoa; Colonia Lerda; Guaymas; Senoyta; Rio Santa Cruz; Pozo de Luís; Bacadehuachy; Sierra Blanca; Ysleta; Rio Negro; Rio Mayo; Moctezuma; Altata; Nuri; Cedros), Chihuahua (Batópolis; Cajón Bonita Creek), Sinaloa (Mazatlán; Presidio de

<sup>a</sup> Thirty-three specimens.<sup>b</sup> Twenty-one specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from Arizona.....	132.5	81.1	30.4	23.8	19.1
Ten adult males from Sonora.....	129.9	79.5	29.6	22.9	18.7
Ten adult males from Sinaloa (9) and Tepic (1).....	131.8	83.2	30.8	22.8	19.2
Two adult males from Jalisco.....	128.5	78	30.8	22.3	19.3
One adult male from Durango.....	127.5	80	30	22	19
Ten adult males ( <i>C. u. brewsteri</i> ) from Cape district, Lower California.....	127.8	77.9	29.9	22.6	17.7
FEMALES.					
Ten adult females from Arizona (9) and New Mexico (1).....	129.7	79.1	26.4	21.8	17.8
Seven adult females from Sonora.....	122.1	76.4	25	20.2	17.4
Ten adult females from Sinaloa (8) and Tepic (2).....	126.7	76.9	26.7	21.4	18.2
Two adult females from Jalisco.....	125.5	74.8	25.5	21.3	17.8
Ten adult females ( <i>C. u. brewsteri</i> ) from Cape district.....	123	73.2	24.9	21	16.6

While specimens from Sinaloa, Durango, Jalisco, etc., average smaller than those from Arizona, some of them being quite as small in one measurement or another as those from the Cape San Lucas district, their coloration is, however, like that of northern examples.

Mazatlán; Culiacán; Escuinapa; Rio Juana Gomez), Jalisco (Bolaños; Sierra de Bolaños; Barranca Ibarra; Guadalajara; Santa Ana and Barranca de Portilla, near Guadalajara), Durango (Chacalá), Zacatecas, Aguas Calientes (Calvillo), and Territory of Tepic (San Blas; Ixtlán, Hacienda de San Ramón; Hacienda de Ambas Aguas; Rancho de San Pablo, in Sierra Alica; Ojo de Agua; Rio Ameca and Palo Amarillo, near Amatlán de Cañas; Amatlan de Cañas; Sierra de Nayarit; Tepic), and northward over greater part of Arizona to southeastern California (Yuma; Needles; etc.), northern Lower California (Hardie River; Gardeners Lagoon; Cócopah Major Mountains; San Fernando) to southeastern Nevada and southwestern New Mexico (Gila; Pueblo Viejo; Redrock).

*Centurus hypopolius* (not *Picus hypopolius* Wagler) PUCHERAN, Rev. et Mag. de Zool., 1853, 163.

*Centurus uropygialis* BAIRD, Proc. Ac. Nat. Sci. Phila., vii, June, 1854, 120 (Bill Williams R., Arizona; coll. U. S. Nat. Mus.); Rep. Pacific R. R. Surv., ix, 1858, 111; ed. 1860 (Birds N. Am.), 111, pl. 36; Rep. U. S. and Mex. Bound. Surv., ii, pt. ii, 1859, 6 (Gila R., Arizona); Cat. N. Am. Birds, 1859, no. 93.—KENNERLY, Rep. Pacific R. R. Surv., iv, pt. vi, 1856, 12, 16 (Bill Williams R., etc., Arizona); x, b, 1859, 22, pl. 36.—HEERMANN, Rep. Pacific R. R. Surv., x, c, 1859, 17 (Gila R. and Tucson, Arizona); x, pt. iv, no. 2, 1859, 58 (Colorado R., California).—CABANIS, Journ. für Orn., 1862, 330 (Zacatecas; crit.).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 54 (Ft. Whipple, Arizona, rare); Check List, 1873, no. 308, part; 2d ed., 1882, no. 452, part.—COOPER, Orn. Cal., 1870, 399 (Ft. Mojave, California).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 558, part, pl. 52, figs. 2, 5; iii, 1874, 521 (Tucson; breeding habits; descr. eggs).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 294 (Mazatlan, Sinaloa; Tepic; Guadalajara, Jalisco).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 133 (Valley of Gila R. and southward, Arizona).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189; iv, 1881, 112, part (monogr.); Nom. N. Am. Birds, 1881, no. 374, part.—BREWSTER, Bull. Nutt. Orn. Club, vi, 1881, 73 (Tucson); viii, 1883, 24 (Camp Lowell and near Tombstone, Arizona; descr. young).—BELDING, Proc. U. S. Nat. Mus., vi, 1883, 344 (Guaymas, Sonora).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 342, part; Check List, 3d ed., 1910, 194, part.—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 352 (Escuinapa and Rio Juana Gomez, s. Sinaloa; crit.).—HOLLISTER, Auk, xxv, 1908, 458 (Needles, California and 10 m. north; common).

[*Centurus*] *uropygialis* COUES, Key N. Am. Birds, 1872, 196, part.

C[*enturus*] *uropygialis* SCLATER, Proc. Zool. Soc. Lond., 1857, 8 ("New Mexico," i. e., Arizona).—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 98 (diagnosis).—COUES, Key N. Am. Birds, 2d ed., 1884, 488, part.

C[*enturus*] *u[ropygialis]* *uropygialis* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 32, in text.

*Picus uropygialis* SUNDEVALL, Conspectus Picin., 1866, 54.

*Melanerpes uropygialis* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 411, part.—SCOTT, Auk, iii, 1886, 428 (Tucson, Florence, Riverside, etc., Arizona; habits).—MORCOM, Bull. Ridgway Orn. Club, no. 2, 1887, 42 (Yuma, California, breeding).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 182, part (Ysleta, Rio Negro, Moctezuma, and Hermosillo, Sonora; Presidio de Mazatlan, Sinaloa; San Blas, Tepic; Santa Ana, near Guadalajara, Jalisco; Cal-

- villos, Aguas Calientes; etc.).—**RHOADS**, Proc. Ac. Nat. Sci. Phila., 1892, 116 (s. Arizona in giant cactus districts).—**JOUY**, Proc. U. S. Nat. Mus., xvi, 1893, 785 (Barranca Ibarra, Jalisco).—**FISHER** (A. K.), North Am. Fauna, no. 7, 1893, 50 (near Mojave, Arizona, 1 spec., March).—**ANTHONY**, Auk, xii, 1895, 138 (San Fernando, Lower California; crit.).—**BENDIRE**, Life Hist. N. Am. Birds, ii, 1895, 127, part.—**SALVIN** and **GODMAN**, Biol. Centr.-Am., Aves, ii, 1895, 423, part (s. to mts. of Jalisco and Aguas Calientes).—**LANTZ**, Trans. Kans. Ac. Sci. for 1896-97 (1899), 220 (Altata, Sinaloa).
- M[elanerpes] uropygialis* **RIDGWAY**, Man. N. Am. Birds, 1887, 294, part.
- [*Melanerpes*] *uropygialis* **SHARPE**, Hand-list, ii, 1900, 212, part.
- C[enturus] sulfuriventer* **REICHENBACH**, Handb. Scansores, Picinæ, Oct., 1854, 410, pl. 664, figs. 4411, 4412 (Mexico).
- Zebrapicus kaupii*<sup>a</sup> **MALHERBE**, Mon. Picid., ii, 1862, 245 ("Bolivia"; coll. A. Malherbe); iv, 1862, pl. 106, figs. 4, 5.
- Centurus kaupii* **GRAY**, List Picidæ Brit. Mus., 1868, 100.
- [*Centurus*] *kaupii* **GRAY**, Hand-list, ii, 1870, 197, no. 8759.

### CENTURUS UROPYGIALIS BREWSTERI Ridgway.

#### BREWSTER'S WOODPECKER.

Similar to *C. u. uropygialis* but smaller, with relatively (often absolutely) larger bill, bars on back, etc., averaging decidedly narrower (the white ones about 1.5-2 mm. wide), black bars on lower rump and upper tail-coverts narrower or more numerous, and white bars on lateral rectrices as well as black ones on inner web of middle rectrices narrower.

*Adult male*.—Length (skins), 202-234 (219); wing, 125-131 (127.8); tail, 73-81.5 (77.9); culmen, 29-31.5 (29.9); tarsus, 21.5-24 (22.6); outer anterior toe, 17-19 (17.7).<sup>b</sup>

*Adult female*.—Length (skins), 192-219 (206); wing, 120-126.5 (123); tail, 66.5-79.5 (73.2); culmen, 23.5-26.5 (24.9); tarsus, 20.5-22 (21); outer anterior toe, 15.5-17.5 (16.6).<sup>b</sup>

Southern Lower California, from Cape San Lucas northward to San Ignacio (Cape San Lucas; San José del Cabo; Triunfo; La Paz; Santa Anita; Todos Santos and 30 miles northward; Santiago; Calmallí; El Cajoncito; Santa Margarita Island).

*Centurus uropygialis* (not of Baird, 1854) **BAIRD**, Proc. Ac. Nat. Sci. Phila., 1859, 302 (Cape San Lucas, Lower California).—**BAIRD**, **BREWER**, and **RIDGWAY**, Hist. N. Am. Birds, ii, 1874, 558, part (Cape San Lucas).—**RIDGWAY**, Proc. U. S. Nat. Mus., iii, 1880, 189, part; iv, 1881, 112, part (Cape San Lucas; monogr.).—**BELDING**, Proc. U. S. Nat. Mus., v, 1882, 543 (San José del Cabo, Lower California); vi, 1883, 345 (Pacific coast of Lower California, n. to 30 m. n. of Todos Santos).—**AMERICAN ORNITHOLOGISTS' UNION COMMITTEE**, Auk, xx, 1903, 342, part; Check List, 3d ed., 1910, 194, part.

<sup>a</sup> Malherbe claims (Mon. Pic., ii, p. 245, footnote) 1853 as the date of his specific name "*kaupii*," on the ground that Bonaparte instituted the name "en effet" by dedicating it, in the *Revue et Magazin de Zoologie* for that year, to "au savant directeur de Musée de Darmstadt." Inasmuch, however, as not even Dr. Kaup's name was given in the passage quoted as evidence, it will readily appear that Professor Baird's specific term *uropygialis* was really the first proposed.

<sup>b</sup> Ten specimens.



- [*Centurus*] *uropygialis* COUES, Key N. Am. Birds, 1872, 196, part (Cape San Lucas).  
 C[*enturus*] *uropygialis* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 98, part.—COUES, Key N. Am. Birds, 2d ed., 1884, 488, part (Cape San Lucas).  
*Melanerpes uropygialis* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 411, part (Lower California).—BRYANT (W. E.), Proc. Cal. Ac. Sci., ser. 2, 1889, 287 (Cape district and Santa Margarita I., Lower California).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., xiii, 1890, 137 (Cape San Lucas; La Paz).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 182, part (La Paz, San José del Cabo, and Cape San Lucas, Lower California).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 423, part (Lower California).—BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 107 (Cape San Lucas district; description).  
 M[*elanerpes*] *uropygialis* RIDGWAY, Man. N. Am. Birds, 1887, 294, part.  
 [M[*elanerpes*] *uropygialis* SHARPE, Hand-list, ii, 1900, 212, part.  
*Centurus uropygialis brewsteri* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 32 (Santiago, s. Lower California; coll. U. S. Nat. Mus.).

## CENTURUS RADIOLATUS (Wagler).

## JAMAICAN WOODPECKER.

*Adult male*.—Crown, occiput, nape, and hindneck bright crimson or carmine; back, scapulars, rump, upper tail-coverts, tail, and wings black, the back, scapulars, and wings (except primaries) very narrowly barred with white or whitish, the lower rump and upper tail-coverts more broadly barred with white, the inner web of middle pair of rectrices also with a few narrow bars of the same; forehead and lores pale buffy brownish or dull buffy whitish, passing into white on posterior portion of loreal region, superciliary region (except posteriorly), suborbital and malar regions, chin, and throat; upper posterior portion of superciliary region, post-auricular region, and foreneck light grayish brown (nearly broccoli brown), this passing into deep yellowish olive on chest, breast, and sides; abdomen and flanks barred with dusky and pale yellowish olive, the first strongly suffused with saffron yellow to vermilion or poppy red, or nearly uniformly yellow or red; thighs, under tail-coverts, and under wing-coverts black, barred with white; bill dull black; legs and feet dusky (in dried skins); length (skins), 250–278 (261); wing, 126–140 (134.4); tail, 81–94 (87.7); culmen, 32.5–38.5 (35.5); tarsus, 23.5–26.5 (25.2); outer anterior toe, 21.5–24 (22.9).<sup>a</sup>

*Adult female*.—Similar to the adult male, but red of head confined to nape and hindneck, the crown and occiput plain brownish gray (smoke gray anteriorly deepening into mouse gray posteriorly); length (skins), 240–260 (251); wing, 127.5–137 (131.7); tail, 78–90.5 (85.3); culmen, 31–36 (33.3); tarsus, 23–26.5 (24.2); outer anterior toe, 20.5–23 (22).<sup>a</sup>

<sup>a</sup> Ten specimens.

*Young female*.—Similar to the adult female, but median portion of crown and occiput red (more or less extensively), and abdomen less strongly suffused with red.

Island of Jamaica (Spanishtown; Moneague; Mansfield, near Bath; Windsor; Priestmans River; Westmoreland; Kingston; St. Catherine; Port Henderson).

[*Picus*] *carolinus* (not of Linnæus, 1758) LINNÆUS, Syst. Nat., ed. 12, i, 1766, 175, part (Jamaica).—GMELIN, Syst. Nat., i, pt. i, 1788, 431, part (Jamaica). *P[icus] radiolatus* WAGLER, Syst. Av., 1827, *Picus*, sp. 39 (Jamaica); Isis, 1829, 512.

*Picus radiolatus* SUNDEVALL, Consp. Av. Picin., 1866, 52.

*C[enturus] radiolatus* GRAY, Gen. Birds, ii, 1846, 442.—NEWTON (A. and E.), Handb. Jamaica, 1881, 109.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 98 (diagnosis).

*Centurus radiolatus* GOSSE, Birds Jamaica, 1847, 271.—SCLATER, Proc. Zool. Soc. Lond., 1861, 79; Cat. Am. Birds, 1862, 343.—ALBRECHT, Journ. für Orn., 1862, 203.—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 284.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 111 (monogr.).—SALVIN, Cat. Strickland Coll., 1882, 399.—CORY, Auk, iii, 1886, 378; Birds West Ind., 1889, 173.—SCOTT, Auk, ix, 1892, 275.—FIELD, Auk, xi, 1894, 124 (Port Henderson, Jamaica; habits, etc.).

[*Centurus*] *radiolatus* BONAPARTE, Consp. Av., i, 1850, 118; Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11.).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.—CORY, List Birds West Ind., 1885, 20.

*Zebrapicus radiolatus* MALHERBE, Mon. Picid., ii, 1862, 237; iv, 1862, pl. 104, figs. 5, 6.

*Melanerpes radiolatus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 166 (Moneague and Spanishtown, Jamaica).—CORY, Cat. West Ind. Birds, 1892, 12, 104, 130.

[*Melanerpes*] *radiolatus* SHARPE, Hand-list, ii, 1900, 210.

(?) *Picus albifrons* SWAINSON,<sup>a</sup> Philos. Mag., n. s., i, June, 1827, 439 ("table-land" of Mexico—error?; coll. Bullock).—LESSON, Compl. Buffon, ix, 1837, 318.

*P[icus] albifrons* WAGLER, Isis, 1829, 514.

*Picus larvatus* TEMMINCK, Pl. Col., iv, livr. 73, 1827, in text to *P. superciliaris*.

### CENTURUS STRIATUS (Müller).

#### HAITIAN WOODPECKER.

*Adult male*.—Crown, occiput, nape, post-auricular region, and hindneck bright crimson or dark poppy red, the feathers slate-grayish beneath the surface; forehead and superciliary region (broadly) light smoke gray, the loreal, suborbital, auricular, and malar regions, chin, and upper throat darker or more brownish gray (between pale hair brown and drab-gray); a white line down side of neck, with a black line between it and the red of post-auricular region; back and scapulars black, sharply and regularly barred with light wax yellow or olive-yellow, sometimes ocher yellow (rarely orange-ochraceous), the rump

<sup>a</sup> The full description is as follows:

"Above blackish, transversely marked with white lines, beneath olivaceous; front, chin, and sides of the head red; crown and neck red.

"Table land: rare.

"Total length, 10½ [inches]; bill 1⅞; wings, 5; tail, 4."

similar, but black interspaces narrower (about as wide as the yellowish bars); upper tail-coverts bright crimson, with concealed portion blackish; tail uniform black; wings black, broadly barred with light yellow (of varying hue), the bars brighter or clearer yellow (nearly saffron) on secondaries, paler (sometimes yellowish white) on wing-coverts and primaries; foreneck and upper chest plain usually light smoky brown (nearly isabella color), but varying in color from olivaceous isabella color to nearly russet, anteriorly passing gradually into gray of throat, posteriorly passing into light yellowish olive-green, strongly tinged with olive-yellow or wax yellow, on flanks, abdomen, and anal region, the under tail-coverts pale grayish olive margined with pale yellow and with more or less distinct narrow shaft-streaks of darker; under surface of tail pale glaucous olive or yellowish gray; under wing-coverts and axillars pale brownish gray or grayish brown, tinged with pale yellowish; inner webs of remiges dusky, with large spots of yellowish white, except on distal half (more or less) of longer and greater part of outermost primaries; bill dull blackish, the mandible paler (grayish in life?); legs and feet dusky in dried skins; length (skins), 214–251 (228); wing, 115.5–130 (120.2); tail, 76–87 (81.9); culmen, 32–39 (33.6); tarsus, 23–25 (23.9); outer anterior toe, 18.5–21 (20.1).<sup>a</sup>

*Adult female*.—Similar to the adult male, but red on head and neck confined to nape, hindneck, and post-auricular region, the crown and occiput uniform black; length (skins), 200–240 (216); wing, 108–123 (117.9); tail, 76.5–94.5 (85); culmen, 25–28 (26.2); tarsus, 21–23.5 (22.2); outer anterior toe, 17–19 (18.1).<sup>a</sup>

*Young male*.—Similar to the adult female (the crown black, without red in first plumage), bars on back, etc., less sharply defined, and under parts much more grayish.

*Young female*.—Similar to the young male, but black of crown more or less suffused with red, sometimes with minute mesial streaks of white.

Island of Haiti (Le Coup and Port au Prince, Haiti; San Francisco Mountains, Aguacate, Honduras, Santo Domingo City, Puerta Plata, Catare, Caña Honda, El Valle, Sanchez, Maniél, Samaná, and La Canita, Santo Domingo).

*Picus striatus* MÜLLER, Vollst. Natursyst. Suppl., 1776, 91 (Santo Domingo; based on *Le Pic Rayé*, *Picus dominicensis striatus*, Brisson, Orn., iv, 65, pl. 4, fig. 1; Daubenton, Pl. Enl., pl. 281).

[*Picus*] *striatus* BODDAERT, Tabl. Pl. Enl., 1783, 17 (based on Pl. Enl., 281).—GMELIN, Syst. Nat., i, pt. i, 1783, 427.—LATHAM, Index Orn., i, 1790, 238.

*Picus striatus* VIEILLOT, Ois.-Am. Sept., ii, 1807, 61, pl. 114; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 90.—VALENCIENNES, Dict. Sci. Nat., xl, 1826, 173.—DRAPIEZ, Dict. Class., xiii, 1828, 505.—CUVIER, Règne Anim., i, 1829, 451.—LESSON, Traité d'Orn., 1831, 227; Compl. Buffon, ix, 1837, 324.—BRYANT, Proc. Soc. N. H., xi, 1867, 96.—SUNDEVAL, Consp. Av. Picin., 1866, 52.

<sup>a</sup> Ten specimens.



- P[icus] striatus* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1316.—WAGLER, Syst. Av., 1827, Picus, sp. 40.—REICHENBACH, Handb., Scansores, Picinæ, 1854, 409, pl. 663, figs. 4404, 4405.
- C[enturus] striatus* GRAY, Gen. Birds, ii, 1846, 442.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 98 (diagnosis).
- Centurus striatus* SALLÉ, Proc. Zool. Soc. Lond., 1857, 234 (Santo Domingo).—GRAY, List Birds Brit. Mus., Capit. and Picid., 1868, 102.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 117 (monogr.).—CORY, Bull. Nutt. Orn. Club, vi, 1881, 154 (mts. of Haiti); Birds Haiti and San Dom., 1884, 111, pl. 23, figs. 1, 2; Auk, iii, 1886, 378; Birds West Ind., 1889, 173.—TRISTRAM, Ibis, 1884, 168.—CHRISTY, Ibis, 1897, 333 (habits; descr. nest and eggs).
- [*Centurus*] *striatus* BONAPARTE, Consp. Av., i, 1850, 119; Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11).—GRAY, Hand-list, ii, 1870, 197, no. 8766.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.—CORY, List Birds West Ind., 1885, 20.
- Zebrapicus striatus* MALHERBE, Mon. Picid., ii, 1862, 231; ii, 1862, pl. 107, figs. 3, 4.
- Chloronerpes striatus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 89.—CORY, Cat. West Ind. Birds, 1892, 12, 104, 131.—CHERRIE, Contr. Orn. San Dom., 1896, 21 (habits).
- [*Chloronerpes*] *striatus* SHARPE, Hand-list, ii, 1900, 205.
- Melanerpes striatus* VERRILL (A. E. and A. H.), Proc. Ac. Nat. Sci., Phila., 1909, 360 (Santo Domingo; habits).

#### Genus *BALANOSPHYRA* Ridgway.

*Balanosphyra* <sup>a</sup> RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 34. (Type, *Picus formicivorus* Swainson.)

Medium-sized Picidæ (wing about 130–151 mm.) similar to *Melanerpes*, but with antrorse prefrontal feathers developed into conspicuous dense tufts, feathers of breast broad and imbricated, eighth, seventh and eighth, or sixth, seventh, and eighth primaries longest, ninth primary nearly as long as fifth, and tenth (outermost) relatively much smaller (about one-fourth as long as ninth), narrower, and more acuminate.

Bill about as long as head or shorter, stout, cuneate in vertical profile, slightly broader than deep at nostrils; culmen slightly but distinctly convex, distinctly but not sharply ridged; gonys usually twice as long as mandibular rami, nearly straight, ascending terminally, very slightly (if at all) prominent basally; supranasal ridge distinct for basal half or more of maxilla. Nostril longitudinally oval, rather large, situated about midway between culmen and tomium, covered by a very conspicuous prefrontal tuft, the feathers comprising which are antrorse anteriorly, dense and semierect posteriorly; malar apex with distinct bristle-like antrorse feathers, and feathers of chin with distinct though relatively short semiantrorse bristly tips. Margin of eyelid densely clothed with short and minute feathers, with a naked crescentic space immediately above and below. Wing long, pointed, the longest primaries exceeding secondaries by one-third the length of wing; eighth, seventh and eighth, or sixth, seventh, and eighth pri-

<sup>a</sup> βάλανος, an acorn; σφύρα, a hammer.

aries longest, the ninth nearly as long as fifth, the tenth (outermost) about one-fourth as long as ninth, narrow and pointed. Tail a little more than half as long as wing, the middle rectrices abruptly acuminate terminally. Tarsus shorter than either outer toe with claw, the upper third (approximately) feathered in front; outer hind toe, without claw, about as long as outer front toe with claw, or very slightly shorter.

*Coloration*.—General color black (glossed with blue or green on side of head and neck, back, scapulars, and chest), the rump, upper tail-coverts, and under parts (posterior to chest) white; lower chest or upper breast (sometimes whole chest) streaked with black and white; forehead and foreneck (connected by a stripe across loreal and malar regions) yellowish white or light yellow; a white patch at base of primaries; adult male with crown, occiput, and nape (or nape only in one species) bright red, adult female with crown black. Young similar to adults.

*Range*.—Pacific coast and southwestern border of United States to Colombia. (Three species?)

#### KEY TO THE SPECIES AND SUBSPECIES OF *BALANOSPHYRA*.

- a. Auricular and orbital regions, chin, and upper throat black; chest uniform black or heavily streaked with black.
- b. Adult males with crown, occiput, and nape red; adult females with crown black, occiput and nape red. (*Balanosphyra formicivora*.)
- c. Chest mostly uniform black.
- d. Larger (wing averaging more than 143, culmen averaging 29.8 in male, 28.3 in female). (Northern Lower California to Oregon.)

*Balanosphyra formicivora bairdi* (p. 107).

- dd. Smaller (wing averaging 140.5 in male, 138.9 in female; culmen averaging 26.1 in male, 24.4 in female); posterior portion of chest more extensively streaked. (Arizona, New Mexico, and western Texas, and States of Sonora, Chihuahua, and Durango, northwestern Mexico.)

*Balanosphyra formicivora aculeata* (p. 105).

- cc. Chest mostly streaked, at least on median portion.
- d. Frontal patch broader, white; adult female with black band across crown much broader; larger (wing averaging more than 138).
- e. Lower throat paler yellow; sides of upper chest mostly uniform black; back, etc., with gloss more greenish.
- f. Darker, with lower throat more strongly tinged with yellow, the sides and flanks more broadly streaked with black. (South-central Texas through eastern and southern Mexico to Guatemala.)

*Balanosphyra formicivora formicivora* (p. 102).

- ff. Lower throat less strongly tinged with yellow, often nearly white; sides and flanks less broadly streaked with black, the streaks sometimes nearly obsolete. (British Honduras.)

*Balanosphyra formicivora albeola* (p. 109).

- ee. Lower throat deeper yellow; sides of upper chest mostly streaked with white; back, etc., with gloss more bluish. (Southern Honduras to western Panama.).....*Balanosphyra formicivora striatipectus* (p. 110).

*dd.* Frontal band narrower, yellow or yellowish white; adult female with black band across crown much narrower; smaller (wing averaging 135.7 in male, 134.8 in female). (Southern Lower California.)

*Balanosphyra formicivora angustifrons* (p. 108).

*bb.* Adult male with crown and occiput glossy black, only the nape red; adult female without any red. (Central Colombia.)

*Balanosphyra flavigula* (extralimital).<sup>a</sup>

*aa.* Auricular and orbital regions white; chin and whole throat light yellow; chest white, streaked with black. (Mexico?)...*Balanosphyra xantholarynx* (p. 111).

### BALANOSPHYRA FORMICIVORA FORMICIVORA (Swainson).

#### ANT-EATING WOODPECKER.

*Adult male.*—Nasal tufts, anterior portion of malar region, chin, and upper throat, black; forehead and rather narrow band across anterior portion of lores to middle or posterior portion of malar region white, passing into pale sulphur or primrose yellow or yellowish white on lower throat and foreneck; crown, occiput, and nape, bright poppy red; orbital and auricular regions, sides of neck, upper chest, lower hindneck, back and scapulars, plain glossy greenish blue-black; wings black or brownish black, the coverts margined with glossy greenish blue-black, the primaries (except three or four outermost) with a basal patch of white, occupying both webs (but interrupted by the black shaft), this white area broader on inner quills; rump and upper tail-coverts immaculate white; tail entirely black; lower chest and sides of upper breast glossy greenish blue-black, more or less broadly streaked with white (the upper chest also sometimes more or less streaked, at least on median portion), the remaining under parts white, the lower breast (except medially), sides, and flanks streaked with black, the under tail-coverts with narrow shaft-streaks of the same; bill black; iris variable in color (pinkish, white, bluish, brownish, or yellowish); legs and feet dusky grayish (greenish gray in life?); length (skins), 191–235 (213); wing, 131.5–151 (141.1); tail, 69–83.5 (76.6); culmen, 23–28.5 (26.9); tarsus, 20–23.5 (22.4); outer anterior toe, 15.5–19 (17.4).<sup>b</sup>

*Adult female.*—Similar to the adult male, but crown glossy greenish blue-black, the anterior margin of the transverse occipito-nuchal area much posterior to posterior angle of eye (about middle of auricular region); length (skins), 190–233 (206); wing, 130.5–148 (136.3); tail,

<sup>a</sup> *Melampicos flavigula* Malherbe, Rev. et Mag. de Zool., Nov., 1849, 542 (Colombia).—*Melampicus flavigula* Malherbe, Mon. Picid., ii, 1862, 202; iv, 1862, pl. 99, figs. 5, 6.—*Melanerpes* *flavigula* Reichenbach, Handb. Scansores, Picinæ, 1854, 384, pl. 643, figs. 4297–4299.—*Melanerpes flavigula* Sclater, Proc. Zool. Soc. Lond., 1855, 161; Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 154.—*Melanerpes formicivorus*, var. *flavigula* Baird, Brewer, and Ridgway, Hist. N. Am. Birds, ii, 1874, 561.—*Melanerpes flavigularis* Sclater, Proc. Zool. Soc. Lond., 1856, 307.—[*Melanerpes*] *flavigularis* Sclater and Salvin, Nom. Av. Neotr., 1873, 100; Sharpe, Hand-list, ii, 1900, 210.—*Balanosphyra flavigula* Ridgway, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.

<sup>b</sup> Forty-one specimens.



68–82.5 (75.6); culmen, 22–27.5 (25.1); tarsus, 19.5–23 (21); outer anterior toe, 15.5–18 (16.9).<sup>a</sup>

*Young male*.—Similar to the adult male, but black of nasal tufts, chin, etc., duller (more sooty), that of the chest dull (not glossy), streaks on breast, etc., less sharply defined, lower throat with less pronounced yellow tinge, and texture of plumage softer.

Eastern and southern Mexico, in States of Tamaulipas (Victoria; Sierra Madre above Victoria; Yerba Buena; Galindo; Guiaves; Realito), Nuevo León (Boquillo; Boque Negro; Cerro de la Silla; Monterrey), San Luis Potosí (Sierra de San Luis Potosí), Guanajuato, Puebla (Tochimulco; Chachapa; Rio Frio, Ixtaccihuátl), Vera Cruz (Orizaba; Jalapa; Córdoba; Potrero and San Lorenzo, near Córdoba; Miradór; Huatusco, near Miradór; Coátepec; Las Vigas; Misantla; San Bartólo; Zentla; Chachapa), Mexico (Temiscáltepec; near City of Mexico; Chimalapa; Mexicalcingo), Hidalgo (Reál del Monte; El Chico), Morelos (Tétela del Volcan), Zacatecas (Sierra de Valparaiso; Sierra de Jerez), Jalisco (Tonila; Zapotlán; Sierra de Bolaños; Mesa la Cienega; Jacalá; La Pisagua; San Sebastián; Volcan de Nieve; La Laja, 9,000 feet), Sinaloa (Plomosas), Tepic (Sierra Madre), Michoacán (Patzcuaro; Nahuatzin), Guerrero (Omiteme; mountains near

<sup>a</sup> Forty-four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
<b>MALES.</b>					
One adult male from southern Sinaloa (Plomosas).....	144	82	27	21	17
Seven adult males from Jalisco.....	143.6	78.4	26.2	21.6	17.1
One adult male from Michoacan.....	151	79	26.5	22.5	17.5
Three adult males from Guerrero.....	139.7	77.8	25	21	16.5
Nine adult males from Vera Cruz.....	142.1	77.1	27.3	22.4	18.3
Seven adult males from Tamaulipas.....	137.7	74.6	27.3	21.6	17.1
Six adult males from Nuevo Leon.....	136.7	72.1	28.8	21.6	16.7
Three adult males from Kerr County (2) and Chisos Mountains (1), Texas.....	135.5	75.2	26.8	21.5	17.2
Three adult males from Chiapas.....	144.8	77.5	25.8	21.7	18.2
Four adult males from Guatemala.....	141.3	79.5	26.5	22.4	18
<b>FEMALES.</b>					
Three adult females from Zacatecas.....	139.7	79.5	25	20	15.5
Four adult females from Jalisco.....	139.4	73.7	24	20.6	16.4
Three adult females from Michoacan.....	142.8	78.3	24.3	21.2	16.7
One adult female from Morelos.....	141	82	22	20.5	17
One adult female from Hidalgo.....	139	76	24	21	17.5
Seven adult females from Vera Cruz.....	139.4	75.9	25.6	21.1	17.6
Eight adult females from Tamaulipas.....	139.1	74.2	25.8	20.9	16.6
Six adult females from Nuevo Leon.....	132.5	70.5	25.9	20.5	16.2
Two adult females from Kerr County and Chisos Mountains, Texas.....	138	73.7	27.2	21.2	17
Five adult females from Chiapas.....	138.5	76.1	25	21.6	17.6
Six adult females from Guatemala.....	139.4	76.6	24.8	21.5	17.3

Chilpancingo; Xautipa; Sierra Madre del Sur), Oaxaca (La Parada; Guichicovi; Sola; Juchatingo; Tehuantepec), Chiapas (San Cristóbal; Pinabete; Palenque; Gineta Mountains), and Guatemala (Calderas, Volcan de Fuego; Chilasco; Rabinál; ridge above Totonicapám; Volcan de Agua; Alótepeque; Tolimán; between Lake Atitlán and Tecpám, 7,000 feet; Hacienda Chancól; Tactíc, Vera Paz), and northward into south-central Texas (Harris Lake and Kerrville, Kerr County; Chisos Mountains).

*Picus formicivorus* SWAINSON, Philos. Mag., i, 1827, 439 (Temiscaltepec, Mexico; type now in Cambridge Mus.).

*Melanerpes formicivorus* BONAPARTE, Proc. Zool. Soc. Lond., 1837, 109 (Mexico); Consp. Av., i, 1850, 115, part (Mexico).—SCLATER, Proc. Zool. Soc. Lond., 1856, 307 (Cordova, Vera Cruz; crit.); 1858, 305 (La Parada, Oaxaca); 1859, 367 (Jalapa, Vera Cruz); 1864, 177 (near City of Mexico); Cat. Am. Birds, 1862, 341, part (s. Mexico).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 114, part (Nuevo Leon).—SCLATER and SALVIN, Ibis, 1859, 137 (Volcan de Fuego, Guatemala).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 294 (Tonila, Jalisco); Bull. U. S. Nat. Mus., 1876, 35 (Guichicovi, Oaxaca; Gineta Mts., Chiapas).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 159 (Chachapa, Puebla; Jalapa, Vera Cruz).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 149, part (Sierra Madre above Victoria, Tamaulipas; Coatepec, Jalapa, and San Lorenzo near Cordova, Vera Cruz; Omilteme, Xautipa, and Sierra Madre del Sur, Guerrero; Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 412, part (Real del Monte, Hidalgo; Chimalpa and Mexicalcingo, Mexico; Rio Frio de Ixtacihuatl, Puebla; Cordova, Jalapa, Las Vigas, Coatepec, Misantla, Huatusco, San Lorenzo, San Bartolo, Zentla, and Chachapa, Vera Cruz; La Parada, Sola, Juchatengo, and Guichicovi, Oaxaca; Gineta Mts., Chiapas; Chilasco, Rabinál, ridge above Totonicapam, Calderas, Volcan de Fuego, Volcan de Agua, Alotepeque, and Toliman, Guatemala; etc.).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 34 (Jalapa).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220, part (Coatepec, Vera Cruz).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 92 (between Lake Atitlan and Tecpam, Guatemala, 7,000 ft.).—LACEY, Auk, xxviii, 1911, 209 (Kerrville, Texas, resident).

[*Melanerpes*] *formicivorus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100, part.—SHARPE, Hand-list, ii, 1900, 209, part.

*Melanerpes formicivorus* RIDGWAY, Man. N. Am. Birds, 1887, 291, part (Tehuantepec, Oaxaca; Jalapa and Cordova, Vera Cruz).

*Melanerpes formicivorus*, var. *formicivorus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 566, part.

*Melanerpes formicivorus formicivorus* PHILLIPS, Auk, xxviii, Jan., 1911, 75 (Yerba Buena, Galindo, Guiaves, and Realito, Tamaulipas).

*Melampus formicivorus* MALHERBE, Mon. Picid., ii, 1862, 199; iv, 1862, pl. 99, figs. 1, 2, 3.

*Balanosphyra formicivora formicivora* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.

*Picus melanopogon* TEMMINCK, Planches Col., iv, livr. 76, March, 1828, pl. 451 and text (Mexico; coll. Berlin Mus.; ex Lichtenstein, manuscript).—LESSON, Compl. Buffon, ix, 1837, 319.—SUNDEVALL, Consp. Av. Picin., 1866, 51, part.

[*Picus*] *melanopogon* WAGLER, Isis, 1829, 515.

[*Melanerpes*] *melanopogon* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 223, part (Jalapa).

*Melampicus melanopogon* MALHERBE, Mém. Acad. Metz, xxx, 1849, 336; Rev. et Mag. de Zool., i, 1849, 542.

[*Melanerpes*] *melanopogon* BONAPARTE, Consp. Av., i, 1850, 115 ("Brazil"); Ateneo Italino, ii, 1854, 125 (Consp. Volucr. Zygod., 1854, 10).

[*Melanerpes formicivorus*.] Subsp.  $\alpha$ . *Melanerpes melanopogon* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 151, part (Sierra Jerez and Sierra de Valparaiso, Zacatecas; Zapotlan, Jalisco; Sierra Madre, Tepic; Sierra San Luis Potosí; Chimalpa, Mexico; Sola and Juchatengo, Oaxaca).

*Melanerpes melanopogon* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 569 (Sierra de Bolaños, Jalisco).

*Picus melanopogon* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, 1; Journ. für Orn., 1863, 55 (reprint).

[*Picus*] *melampogon* LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 76.

*Melanerpes formicivorus*, var. *striatipectus*, part, RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, ii, 1874, 561 (Orizaba and Mirador, Vera Cruz).

*Melanerpes formicivorus* . . . *striatipectus* BOUCARD, Liste Ois. récol. Guat., 1878, 78 (Guatemala).

### BALANOSPHYRA FORMICIVORA ACULEATA (Mearns).

#### MEARNS' WOODPECKER.

Similar to *B. f. formicivora*, but averaging smaller, especially the bill, and with the chest much more extensively uniform black.

*Adult male*.—Length (skins), 195–227 (210); wing, 135–146.5 (140.5); tail, 70–83 (76.8); culmen, 23.5–29.5 (26.1); tarsus, 20–22.5 (21.3); outer anterior toe, 15.5–18.5 (17).<sup>a</sup>

*Adult female*.—Length (skins), 191–220 (207); wing, 132.5–144 (138.9); tail, 67.5–82 (76); culmen, 22–26.5 (24.4); tarsus 19–22 (20.4); outer anterior toe, 15–18 (16.1).<sup>b</sup>

Arizona, New Mexico, and western Texas (Davis Mts.; Fort Davis, in oak belt), southward over northwestern Mexico, in States of Sonora (San José Mts.; La Chumata; Rio de Santa Cruz; Oposura; Nogales; Cerro Blanco; Cachute; El Pinita; Santa Rosa; Yecaera),

<sup>a</sup> Thirty-two specimens.

<sup>b</sup> Thirty-three specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.					
Nine adult males from Arizona.....	140.2	76.2	25.4	21.4	16.5
Three adult males from New Mexico.....	141.3	78.8	24.7	21.3	16.5
Four adult males from Chihuahua.....	139	77.2	25.6	20.9	17.5
Six adult males from Sonora.....	142.2	79.2	27.1	21.6	17.5
Ten adult males from Durango.....	140.3	74.8	26.7	21.2	17
FEMALES.					
Ten adult females from Arizona.....	139.3	78.4	23.8	20.6	16.1
Three adult females from New Mexico.....	137.8	76.5	25.5	21	16.2
Three adult females from western Texas (Davis Mountains)...	137.8	80.2	26	20.7	16.8
Six adult females from Chihuahua.....	139.9	74.5	24.7	20.3	16.2
Four adult females from Sonora.....	137.2	71	23.6	19.8	16
Seven adult females from Durango.....	139.5	75.4	24.4	20.3	15.8



Chihuahua (Carmen; San Lu s Mts.; Bravo; Pacheco; Colonia G rcia; Bostillos; 30 miles west of Mi aca; Casas Grandes; Pi os Altos; Ref gio; San Jos ; Tomoch c; Jes s Maria); and Durango (Cienega de las Vacas; Arroyo del Buey; El Salto; Rio Sest n; Chacal ; Los Coyotes; Ciudad).

*Melanerpes formicivorus* (not *Picus formicivorus* Swainson) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 114, part (Los Nogales, Sonora; Copper Mines and Ft. Thorn, New Mexico); Rep. U. S. and Mex. Bound. Surv., ii, pt. ii, 1859, 6, part (Los Nogales; Copper Mines; Ft. Thorn); Cat. N. Am. Birds, 1859, no. 95, part.—COUES, Ibis, 1865, 162, in text (Ft. Whipple, Arizona); Proc. Ac. Nat. Sci. Phila., 1866, 55 (Ft. Whipple; variations in color of iris, etc.); Check List, 1873, no. 310, part; 2d ed., 1882, no. 310, part.—COOPER, Orn. Calif., 1870, 403, part (Arizona).—HENSHAW, Rep. Orn. Coll. Wheeler's Surv., 1874, 134 (Oak Orchard and Apache, Arizona; habits); Zool. Exp. W. 100th Merid., 1875, 399 (Camp Apache, Oak Orchard, and Chiricahua Mts., Arizona).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 412, part (Santa Rosa and Yecaera, Sonora; Pi os Altos, Refugio, San Jos , Tomoch c, and Jesus Maria, Chihuahua; Ciudad Durango, Durango; Arizona).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 120 (check list no. 407), part.—HUNN, Auk, xxiii, 1906, 421 (Pi os Altos, Grant Co., New Mexico).—WETMORE, Kansas Univ. Sci. Bull., iv, no. 19, 1908, 379 (Bill Williams Mt., Arizona).

[*Melanerpes formicivorus*] var. *formicivorus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 561, part (n. w. Mexico).

*Melanerpes formicivorus*, var. *formicivorus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 566, part.

*Melanerpes formicivorus formicivorus* MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 165 (Cienega de las Vacas, Arroyo del Buey, Rio Sestin, etc., n. w. Durango).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 192, part (Arizona; New Mexico).—BERGTOLD, Auk, xxix, 1912, 332 (Gila R., New Mexico).

*Melanerpes formicivorus bairdi* RIDGWAY, Bull. U. S. Nat. Mus., no. 21, 1881, 35 (no. 377), 85, part (w. Mexico).—COUES, Check List, 2d ed., 1882, no. 454, part.—BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 24 (Chiricahua Mts., Arizona).—SCOTT, Auk, ii, 1885, 174, 356 (Santa Catalina Mts., Arizona); iii, 1886, 427 (Pinal and Santa Catalina Mts., resident down to 4,000 ft.).—HENSHAW, Auk, iii, 1886, 79 (upper Pecos R., New Mexico, August).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 407, part.—SHUFELDT, Auk, iv, 1887, 345 (Ft. Wingate, New Mexico).—MEARNS, Auk, vii, 1890, 48 (n. e. Arizona).—MERRIAM, North Am. Fauna, no. 3, 1890, 39, 92 (Grand Canyon of Colorado, n. Arizona).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1892, 116 (Santa Catalina Mts., Arizona, oak belt up to 9,000 ft.).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 36 (n. e. Sonora and n. w. Chihuahua).

*Melanerpes formicivorus bairdi* RIDGWAY, Man. N. Am. Birds, 1887, 291, part.

*Melanerpes fformicivorus bairdi* COUES, Key N. Am. Birds, 2d ed., 1884, 489, part.

*Melanerpes formicivorus aculeatus* MEARNS, Auk, vii, no. 3, July, 1890, 249 (Squaw Peak, central Arizona; coll. E. A. Mearns), 253 (mts. of Arizona, throughout pine belt; habits).—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 597.—SWARTH, Pacific Coast Airfauna, no. 4, 1904, 13 (Huachuca Mts., Arizona, chiefly below 6,000 ft.; crit.); Condor, vii, 1905, 78 (Santa Rita Mts., Arizona).

*Balanosphyra formicivora aculeata* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.

[*Melanerpes formicivorus*.] Subsp.  $\alpha$ . *Melanerpes melanopogon* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 151, part (localities in Arizona and New Mexico; Sonora; Jesus Maria, San José, Refugio, Tomochic, Piños Altos, and Sonora, Chihuahua; Ciudad Durango, Durango).

*Melanerpes formicivorus melanopogon* THAYER and BANGS, Proc. Boston Soc. N. H., xix, Feb. 26, 1906, 19 (La Chumata, n. e. Sonora, breeding; crit.).

[*Melanerpes*] *melanopogon* SHARPE, Hand-list, ii, 1900, 209, part.

### BALANOSPHYRA FORMICIVORA BAIRDI (Ridgway).

#### CALIFORNIA WOODPECKER.

Similar to *B. f. aculeata*, but decidedly larger, uniform black of chest still more extended, and lower throat more strongly yellow.

*Adult male*.—Length (skins), 210–245 (225); wing, 137–149 (143.2); tail, 73–88 (79.5); culmen, 26–31.5 (29.8); tarsus, 20.5–24.5 (22.4); outer anterior toe, 17–19 (18.2).<sup>a</sup>

*Adult female*.—Length (skins), 215–244 (227); wing, 135–149 (143.4); tail, 69.5–85.5 (80.7); culmen, 26–33 (28.3); tarsus, 20.5–24 (21.8); outer anterior toe, 16.5–19.5 (18.4).<sup>a</sup>

Pacific coast district of United States, from northern Lower California (Santo Tomas, July; Tecate Valley, June; Nachiguero Valley, June; Burro Cañon, June; Hansen's Ranch; Ensenada; San Pedro Martir Mountains) to northwestern Oregon; straggler to south-central Oregon (Fort Klamath).

*Picus formicivorus* (not of Swainson) LESSON, Compl. Buffon, ix, 1837, 318.—VIGORS, Zool. Voy. "Blossom," 1839, 23 (Monterey, California).—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 682 (mts. near Santa Barbara, California).

[*Melanerpes*] *formicivorus* GRAY, Gen. Birds, ii, 1846, 444.

*Melanerpes formicivorus* GAMBEL, Journ. Ac. Nat. Sci. Phila., 1847, 56 (California).—CASSIN, Illustr. Birds Calif., Tex., etc., 1856, 7, part, pl. 2 (California; habits).—SCLATER, Proc. Zool. Soc. Lond., 1857, 127 (San José Valley, California).—NEWBERRY, Rep. Pacific R. R. Surv., vi, 1857, 90 (Sacramento Valley, California to Columbia R.; habits).—BAIRD, in Rep. Stansbury's Surv. Great Salt Lake, 1852, 333 (Santa Barbara); Rep. Pacific R. R.

<sup>a</sup> Twenty specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from central and northern California (9) and Oregon.....	142.4	80.8	28.6	22.4	18.5
Ten adult males from San Diego County, southern California (8) and northern Lower California (2).....	144	78.2	29.3	22.4	17.8
FEMALES.					
Ten adult females from central and northern California.....	143.7	80.3	29.4	22	18.6
Ten adult females from San Diego County.....	143	81.1	27.2	21.6	17.9

- Surv., ix, 1858, 114, part; Cat. N. Am. Birds, 1859, no. 96, part.—BOLLE, Journ. für Orn., 1858, 321 (habits).—HEERMANN, Rep. Pacific R. R. Surv., x, iv, no. 2, 1859, 58 (California; habits).—COOPER, Orn. Cal., 1870, 403, part.—COUES, Check List, 1873, no. 310, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 53, figs. 1, 2.—RIDGWAY, Orn. 40th Parallel, 1877, 553 (Sacramento, California); Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 377.—BELDING, Proc. U. S. Nat. Mus., i, 1878, 390, 391, 393, 430 (Big Trees and Murphy's, Calaveras Co., and Marysville, California).
- [*Melanerpes*] *formicivorus* GRAY, Hand-list, ii, 1870, 201, no. 8816, part.—COUES, Key N. Am. Birds, 1872, 197, part.
- Melanerpes formicivorus*, var. *formicivorus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 566, part, pl. 53, figs. 1, 2.
- Melanerpes formicivorus bairdi* RIDGWAY, Bull. U. S. Nat. Mus. no. 21, Jan., 1881, 34 (no. 377), 85 (Petaluma, Sonoma Co., California; coll. U. S. Nat. Mus.).—COUES, Check List, 2d ed., 1882, no. 454.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 407, part; 3d ed., 1910, 193.—EVERMANN, Auk, iii, 1886, 94 (Ventura Co., California).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 206 (Shasta Co., California).—BENDIRE, Auk, v, 1888, 240 (Ft. Klamath, e. Oregon, straggler); Life Hist. N. Am. Birds, ii, 1895, 112.—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 287 (Hansens and Ensenada, Lower California).—ANTHONY, Zoë, iv, 1893, 236 (San Pedro Martir Mts., Lower California).—MERRIAM (Florence A.), Auk, xiii, 1896, 117 (San Diego Co., California; habits).—BEAL, Bull. 34, U. S. Biol. Surv., 1910, 22 (food); Bull. 37, 1911, 43, pl. 4 (food).
- [*Melanerpes*] *formicivorus bairdi* COUES, Key N. Am. Birds, 2d ed., 1884, 489.—RIDGWAY, Man. N. Am. Birds, 1887, 291.
- [*Melanerpes*] [*formicivorus*] *bairdi* FISHER (W. K.), Condor, viii, 1906, 107 (acorn storehouse; illustrations).
- Balanosphyra formicivora bairdi* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.
- Picus melanopogon* (not of Temminck) SUNDEVALL, Consp. Av. Picin., 1866, 51, part (California).
- [*Melanerpes*] *melanopogon* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 223, part (California).—SHARPE, Hand-list, ii, 1900, 209, part (California).
- [*Melanerpes formicivorus*] Subsp.  $\alpha$ . *Melanerpes melanopogon* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 151, part (California localities).

**BALANOSPHYRA FORMICIVORA ANGUSTIFRONS (Baird).**

**NARROW-FRONTED WOODPECKER.**

Similar to *B. f. formicivora*, but wing averaging much shorter, bill relatively larger, white frontal band decidedly narrower, lower throat usually much more strongly yellow, white area on proximal portion of remiges smaller, the adult female with black area on crown much narrower.

*Adult male*.—Length (skins), 198–222 (213); wing, 131–139.5 (135.7); tail, 72–79 (76.3); culmen, 26–30 (27.6); tarsus, 20–22.5 (21.1); outer anterior toe, 16.5–18 (17.2).<sup>a</sup>

*Adult female*.—Length (skins), 193–224 (210); wing, 130–138 (134.8); tail, 64.5–80 (75.5); culmen, 25–27 (25.7); tarsus, 19–22 (20.5); outer anterior toe, 15–17 (16.3).<sup>a</sup>

<sup>a</sup> Ten specimens.



Cape San Lucas district of Lower California (Cape San Lucas; San José del Rancho; San Nicolás; El Saúz; La Laguna; Sierra de la Laguna; Sierra de Victoria; Calabasas; Triunfo).

*Melanerpes formicivorus*, var. *angustifrons* BAIRD, in Cooper's Orn. Cal., i, 1870, 405 (Cape San Lucas, Lower California; coll. U. S. Nat. Mus.).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 573.—COUES, Check List, 1873, no. 310a.

[*Melanerpes formicivorus*.] Var. *angustifrons* COUES, Key N. Am. Birds, 1872, 197.

*Melanerpes formicivorus angustifrons* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 190, 219; Nom. N. Am. Birds, 1881, no. 377a.—BELDING, Proc. U. S. Nat. Mus., v, 1882, 549 (Miraflores, Lower California); vi, 1883, 349 (Victoria Mts., Lower Cal.).—COUES, Check List, 2d ed., 1882, no. 455.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 407a; 3d ed., 1910, 193.—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 287 (Miraflores and Victoria Mts., Lower California).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 117.

*Melanerpes angustifrons* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 53, figs. 3, 4.—BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 105 (crit.; habits).

[*Melanerpes*] *angustifrons* SHARPE, Hand-list, ii, 1900, 209.

*Melanerpes formicivorus angustifrons* COUES, Key N. Am. Birds, 2d ed., 1884, 490.

*Melanerpes formicivorus angustifrons* RIDGWAY, Man. N. Am. Birds, 1887, 291.

[*Melanerpes formicivorus*.] Subsp.  $\beta$ . *Melanerpes angustifrons* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 153 (Sierra de Laguna and Triunfo, Lower California).

*Balanosphyra formicivora angustifrons* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.

### BALANOSPHYRA FORMICIVORA ALBEOLA (Todd).

#### BELIZE WOODPECKER.

Similar to *B. f. formicivora*, but under parts more extensively white (the sides and flanks much more narrowly streaked and the white streaks on breast and chest broader) and the lower throat less strongly tinged with yellow.

*Adult male*.—Length (skins), [225]; wing, 137–139 (138); tail, 82–83.5 (82.7); culmen, 26.5–27.5 (27); tarsus, 21.5–22.5 (21.8); outer anterior toe, 18.5–19.5 (19).<sup>a</sup>

*Adult female*.—Length (skins), 205–207 (206); wing, 135–142.5 (138.8); tail, 76–76.5 (76.3); culmen, 24.5–25.5 (25); tarsus, 21.5–22 (21.8); outer anterior toe, 17.5–18 (17.8).<sup>b</sup>

British Honduras (near Manatee Lagoon; Belize).

*Melanerpes formicivorus* (not *Picus formicivorus* Swainson) MOORE, Proc. Zool. Soc. Lond., 1859, 60, part (near Belize, Brit. Honduras).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 149, part (Cayo and Southern Pine Ridge, Brit. Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 412, part (pine ridge of Belize, Brit. Honduras).

*Melanerpes formicivorus albeolus* TODD, Proc. Biol. Soc. Wash., xxiii, Dec. 6, 1910, 153 (near Manatee, British Honduras; coll. Carnegie Mus.).

*Balanosphyra formicivora albeola* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.

<sup>a</sup> Three specimens.

<sup>b</sup> Two specimens; one of these, said to be from Belize.

**BALANOSPHYRA FORMICIVORA STRIATIPLECTUS (Ridgway).****STREAKED-CHESTED WOODPECKER.**

Similar to *B. f. formicivora*, but with whole chest streaked with white or else with only a narrow band of uniform black across anterior margin, white area on proximal portion of remiges smaller, lower throat much more decidedly yellow, color of back, etc., more bluish (less greenish) black, and upper tail-coverts usually margined terminally with black.

*Adult male*.—Length (skins), 193–238 (212); wing, 134–147 (141.1); tail, 69–84.5 (77.1); culmen, 25–29 (26.7); tarsus, 21–25 (22.6); outer anterior toe, 17–20 (18.5).<sup>a</sup>

*Adult female*.—Length (skins), 193–230 (209); wing, 132.5–147 (139.6); tail, 74–86 (78.5); culmen, 23–27 (25.3); tarsus, 20.5–23 (22); outer anterior toe, 17–19.5 (18.1).<sup>b</sup>

Southeastern Honduras (Rio Segovia), through Nicaragua (Matagalpa; San Rafael del Norte; Ocotal; Rio Grande) and Costa Rica (Birrís, Azahár, La Estrella, Naranjo, and Cartago, de Cartago; Volcan de Irazú; San José; La Palma de San José; Escazú; El Zarcero de Alajuela; Grécia; Monte Redondo; Barranca; Coliblanco; Cervantes; Santa Maria, Laguaria, and Copéy, de Dota), and western Panamá (Volcan de Chiriquí, Boquete, and David, de Chiriquí).

*Melanerpes formicivorus* (not *Picus formicivorus* Swainson) SCLATER, Proc. Zool. Soc. Lond., 1856, 143 (David, Chiriquí, w. Panama).—(?) MOORE, Proc. Zool. Soc. Lond., 1859, 60, part ("Chilomo," i. e. Chaloma, Honduras).—CABANIS, Journ. für Orn., 1862, 322 (Costa Rica; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 131 (San José, Barranca, Dota, and Birris, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 364 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 213 (Volcan de Chiriquí, w. Panama).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 49 (Volcan de Irazú and Naranjo de Cartago, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., v, 1883, 497 (Volcan de Irazú); x, 1888, 591 (Rio Segovia, s. Honduras).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 124 (Cartago, Monte Redondo, Barranca, Zarcero de Alajuela,

<sup>a</sup> Twenty-six specimens.

<sup>b</sup> Twenty-four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Three adult males from southern Honduras (Rio Segovia).....	143.3	75.7	28.2	23.8	19.3
Three adult males from northern Nicaragua.....	142.3	79.5	27	22.7	19.3
Ten adult males from Costa Rica.....	141.2	75.5	26.6	22.8	18.3
Ten adult males from western Panamá.....	139.9	78.4	26.4	21.9	18.3
FEMALES.					
Six adult females from northern Nicaragua.....	142.7	82.4	25.5	21.9	18.6
Ten adult females from Costa Rica.....	138.1	77.3	24.9	22.2	17.8
Eight adult females from western Panamá.....	139.2	77.1	25.3	22	18.1

and La Palma de San José, Costa Rica).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 149, part (Dota, San José, and Volcan de Irazú, Costa Rica; Volcan de Chiriqui, Panama).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 412, part (Rio Segovia, Honduras; Matagalpa and San Rafael del Norte, Nicaragua; Grecia, Potrero, Cervantes, etc., Costa Rica; David and Volcan de Chiriqui, w. Panama).—(?) LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220, part (Chaloma, Honduras).

[*Melanerpes*] *formicivorus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100, part.—SHARPE, Hand-list, ii, 1900, 209, part.

*Melanerpes*] *formicivorus* RIDGWAY, Man. N. Am. Birds, 1887, 291, part (Costa Rica).

*Melanerpes formicivorus*, var. *formicivorus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 566, part (Costa Rica; Honduras?).

[*Melanerpes formicivorus*] var. *striatipectus* RIDGWAY, in Baird, Brewer, and Ridgway's Hist. N. Am. Birds, ii, Jan., 1874, 561 (locality not given, but type from Birris, Costa Rica; coll. U. S. Nat. Mus.).

*Melanerpes formicivorus*, var. *striatipectus* RIDGWAY, in Baird, Brewer, and Ridgway's Hist. N. Am. Birds, ii, 1874, 561, footnote (crit.).

*Melanerpes formicivorus striatipectus* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 33 (Boquete, Chiriqui, w. Panama, 4,000-4,500 ft.).—CARRICKER, Ann. Carnegie Mus., vi, 1910, 585 (Costa Rica; habits).

*Melanerpes striatipectus* ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23.

*Balanosphyra formicivora striatipectus* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.

[*Melanerpes*] *melanopogon* (not *Picus melanopogon* Temminck) HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 223, part (Costa Rica).

### BALANOSPHYRA XANTHOLARYNX (Reichenbach).

#### YELLOW-THROATED WOODPECKER.

Similar to *B. formicivora* but differing in entire absence of black on sides of head (except a malar stripe), the whole of the auricular and orbital regions, together with sides of neck being white, the last, however, with a few small black spots; in entire absence of black on throat and chin, which are wholly yellow, and in having the chest white, sparsely streaked with black, the median, as well as lateral, under parts apparently also streaked with black.<sup>a</sup>

Mexico? (Locality of type specimen, still unique, unknown.)

<sup>a</sup> The original description is as follows: "Stirn fahlweisslich, von da bis zum Genick hochroth, Streif vom Mundwinkel das Auge einschliessend seitlich am Halse zur Brust herabsteigend weiss! Zügel schwarz! Kehle einfarbig ochergelb, Mantel, Flügel und Schwanz schwarz, Rücken und Schultern grünlich schillernd, grosser Mittelfleck auf den Vorderschwingen und Bürzel reinweiss, Unterseite düsterweiss, schwarzbraun schaftstreifig, Innenränder der Hinterschwingen weiss.—Ich messe 9'' 6''', Schnabel erste 11''', -spalte 1'' 2''', -höhe 4''', Mundbreite 7½''', Fittig 5'' 6''' Schwanz 3'' 5''', Lauf 11''', äussere Vorderzehe 8''', Nagel 4¼''', innere Vorderzehe 6''', Nagel 4''', äussere Hinterzehe 8½''', Nagel 4''', innere Hinterzehe 4½''', Nagel 2¼'''.—Durch die in der Diagnose cursiv gedruckten Kennzeichen sehr ausgezeichnete Art und die einzige der Gattung mit Zügeln.—Ich erhielt das Exemplar von einem Naturalienhändler ohne bestimmte Angabe des Vaterlandes und möchte die Art zu weiterer Beobachtung empfehlen.—Mexico?"



- M[elanerpes] xantholarynx* REICHENBACH, Handb. Scans., Picinæ, 1854, 384, no. 887, pl. 643, figs. 4293-94 (Mexico?).
- Melanerpes xantholarynx* GRAY, List Birds Brit. Mus., Picidæ, 1868, 116.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 155 (Mexico?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 426.
- [*Melanerpes*] *xantholarynx* GRAY, Hand-list, ii, 1870, 201, no. 8817.—SHARPE, Hand-list, ii, 1900, 210.
- Melampicus xantholarynx* MALHERBE, Mon. Picid., ii, 1862, 204; iv, 1862, pl. 100, fig. 6.
- Picus xantholarynx* SUNDEVALL, Consp. Av. Picin., 1866, 51.
- Balanosphyra xantholarynx* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 35.

### Genus LINNEOPICUS Malherbe.

- Linneopicus* MALHERBE, "Mém. Acad. Metz, 1848-49"; Nouv. Classif. Picin., July, 1850, 52. (Type, *Picus herminieri* Lesson.)
- Linnaipicus* (emendation) BONAPARTE, Ann. Sci. Nat. (Zool.), 4 sér., i, 1854, 129; Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11).
- Linnoeipicus* (emendation) MALHERBE, Mon. Picid., i, 1861, p. xlvihi.
- Linneipicus* (emendation) MALHERBE, Mon. Picid., i, 1861, p. liii.

Medium-sized Picidæ (wing 125-138 mm.) resembling *Melanerpes* but differing in relatively longer tail (more than two-thirds as long as wing), with more narrowly but less abruptly acuminate rectrices, shorter and more rounded wing with very large and broad outermost (tenth) primary (nearly half as long as ninth), feathered orbital region, and uniform black coloration.

Bill about as long as head, rather slender, the culmen faintly convex toward base, straight terminally, distinctly but not sharply ridged; gonys much longer than mandibular rami, straight or nearly so, ascending terminally rather prominent basally, distinctly ridged terminally; supranasal ridge very indistinct, quite obsolete on anterior half of maxilla. Nostril rather large, broadly oval, situated about midway between culmen and tomium, partly covered by small antrorse bristly prefrontal feathers; feathers of malar apex bristle-like, antrorse, the feathers of chin with long, semiantrorse bristly tips. Orbital region almost completely feathered. Wing moderately long, the longest primaries exceeding secondaries by only one-fifth the length of wing, much rounded, the fifth, sixth, and seventh primaries longest, ninth shorter than fourth, the tenth nearly half as long as ninth, distinctly bowed or arched, about one-sixth as wide as long. Tail more than two-thirds as long as wing, graduated for one-third its length, or more, the rectrices gradually narrowed terminally, the middle ones with tip narrowly cuneate. Tarsus nearly as long as outer hind toe with claw, rather slender; outer hind toe distinctly shorter than outer front toe.

*Coloration*.—Uniform glossy greenish black, the under parts duller black washed on chest and breast with dark crimson or maroon.

*Range*.—Island of Guadeloupe, Lesser Antilles. (Monotypic.)

## LINNEOPICUS HERMINIERI (Lesson).

## GUADELOUPE WOODPECKER.

*Adults (sexes alike).*—Above uniform glossy blue-black, the pileum less glossy, less bluish; under parts slightly glossy bluish or greenish black, the chest and median portion of breast and upper abdomen more or less strongly suffused or tinged with dusky red or maroon; bill black; legs and feet dusky (in dried skins).

*Adult male.*—Length (skins), 228–263 (243); wing, 131.5–138 (135); tail, 80–99.5 (88); culmen, 32.5–39.5 (33.4); tarsus, 26–28 (27.1); outer anterior toe, 21–24 (22.9).<sup>a</sup>

*Adult female.*—Length (skins), 224–242 (234); wing, 125.5–132.5 (128.6); tail, 77–93 (87.5); culmen, 26–28 (27.1); tarsus, 23–24.5 (23.7); outer anterior toe, 19–20.5 (19.8).<sup>b</sup>

Island of Guadeloupe, Lesser Antilles.

*Picus herminieri* LESSON, *Traité d'Orn.*, 1831, 228 (Guadeloupe, Lesser Antilles; coll. Paris Mus.).—DES MURS, *Icon. Orn.*, livr. 7, Dec., 1846, tab. contents, pl. 38.—SUNDEVALL, *Consp. Av. Picin.*, 1866, 51.

*Melanpicus herminieri* MALHERBE, *Mém. Acad. Metz*, xxx, 1849, 365.

*Melanpicus herminieri* MALHERBE, *Mon. Pucid.*, ii, 1862, 198; iv, 1862, pl. 100, fig. 1.

[*Melanerpes*] *herminieri* BONAPARTE, *Consp. Av.*, i, 1850, 115.—GRAY, *Hand-list*, ii, 1870, 201, no. 8822.—SHARPE, *Hand-list*, ii, 1900, 210.

*M[elanerpes] herminieri* REICHENBACH, *Handb. Scansores, Pucidæ*, 1854, 381, pl. 643, figs. 4280–4281.

*Melanerpes herminieri* GRAY, *List Birds Brit. Mus.*, *Pucidæ*, 1868, 117.—HARGITT, *Cat. Birds Brit. Mus.*, xviii, 1890, 163.—CORY, *Cat. West Ind. Birds*, 1892, 12, 133.

[*Melanerpes*] *l'herminieri* SCLATER and SALVIN, *Nom. Av. Neotr.*, 1873, 100.—CORY, *List Birds West Ind.*, 1885, 20.

*Melanerpes l'herminieri* LAWRENCE, *Proc. U. S. Nat. Mus.*, i, 1878, 459, 487.—CORY, *Auk*, iii, 1886, 377; viii, 1891, 48; *Birds West Ind.*, 1889, 172; *Cat. West Ind. Birds*, 1892, 104.

*Linneopicus herminieri* MALHERBE, *Nouv. Classif. Pic.*, 1850, 53.

[*Linnæipicus*] *herminieri* BONAPARTE, *Ateneo Italiano*, ii, 1854, 126 (*Consp. Volucr. Zygod.*, 1854, 10).

## Genus ASYNDESMUS Coues.

*Asyndesmus* COUES, *Proc. Ac. Nat. Sci. Phila.*, 1866, 55. (Type, by original designation, *Picus torquatus* Wilson = *Asyndesmus lewisi* Riley.)

Rather large *Pucidæ* (wing 162–180 mm.), resembling *Melanerpes*, but with relatively longer wing, more slender and less distinctly ridged bill, and with plumage of under parts and hindneck peculiar (coarse and hair-like).

Bill about as long as head, rather slender, about as deep as broad at nostrils, more compressed terminally; culmen slightly but distinctly convex, not sharply ridged; gonys more than twice as long as mandibular rami, nearly straight, not prominent basally, rather distinctly

<sup>a</sup> Ten specimens.

<sup>b</sup> Five specimens.

ridged terminally; supra-nasal ridge distinct for basal third, or more, of maxilla. Nostril longitudinally elliptical, situated about midway between culmen and tomium (or rather nearer to former), covered by small antrorse latero-frontal feathers; feathers of malar apex antrorse, with distinct bristle-like tips, those of chin also with long antrorse or semi-antrorse bristly tips. Orbital region naked for a rather narrow space both above and below eye, but margin of eyelids clothed with short feathers. Wing long (about five times as long as culmen), the longest primaries exceeding secondaries by nearly one-third the length of wing; sixth, seventh, and eighth primaries longest, the ninth about equal to fourth, the tenth (outermost) less than one-third as long as ninth. Tail less than two-thirds as long as wing, the rectrices rather broad, abruptly acuminate. Tarsus shorter than either outer toe with claw, but longer than either digit alone; outer hind toe slightly shorter than outer front toe.

*Coloration*.—Adults uniform dark metallic bronzy greenish or glossy bronzy greenish black above, a ring around neck (widening on chest) hoary gray; abdomen, sides, and flanks pinkish red; loreal, orbital, and malar regions and chin dark crimson; sexes alike.

*Range*.—Western North America (northern Mexico to British Columbia).

#### ASYNDESMUS LEWISI Riley.

##### LEWIS'S WOODPECKER.

*Adult male*.—Forehead, lores, orbital region, anterior half of auricular region, malar region, chin, and upper throat dark crimson or bright burnt-carmine; rest of head (except lower throat), nape, and upper parts generally, together with posterior flanks and under tail-coverts, plain glossy greenish black, the back and scapulars more bronzy; lower throat dull black, the feathers (except on upper portion) tipped, more or less, with pale gray or grayish white, the foreneck similar, but with much broader pale gray tips; chest and a broad, sharply-defined collar around hindneck, light silvery gray; breast, abdomen, sides, and greater part of flanks light crimson or pinkish red, intermixed (in fine longitudinal lines or streaks) with pale silvery gray or white, especially on breast, where the reddish color is paler and less strongly contrasted with the pale gray of the chest; under surface of wings and tail uniform black, faintly glossed with bronzy greenish, at least on under wing-coverts; bill dull black or dusky; iris brown; legs and feet dusky (gray or bluish gray in life); length (skins), 240–272 (252); wing, 162–180 (173.6); tail, 87.5–102 (97.3); culmen, 28–33 (29.7); tarsus, 24–26.5 (25.5); outer anterior toe, 19.5–21 (20.4).<sup>a</sup>

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<sup>a</sup> Sixteen specimens.



*Adult female*.—Similar to the adult male and apparently not always distinguishable, but usually with the gray of chest more broken by exposure of the dusky on underlying portion of the feathers; length (skins), 238–265 (254); wing, 164–175 (169.3); tail, 86–96.5 (92); culmen, 25.5–33 (28.6); tarsus, 23–26 (24.6); outer anterior toe, 18–21 (19.6).<sup>a</sup>

*Young (both sexes)*.—Red of head replaced (except in transition plumage) by black or dusky, collar obsolete or wholly wanting, under parts mostly dull pale gray or dull grayish white and dusky (suffused, or intermixed in places with red), the feathers of softer and more blended texture; inner secondaries sometimes tipped with whitish; otherwise like adults.

Transition Zone of western North America, from southern British Columbia (chiefly east of Cascade Mountains, but occasional on Vancouver Island) and southern Alberta (Bow River, eastern base of Rocky Mountains, latitude 51°), south to southern Arizona (Santa Catalina and Huachuca Mountains, Tucson, etc.) and New Mexico (Chama; Mora, breeding; Long Canyon; Piños Altos, Grant County) and western Texas (San Angelo; Spring Creek; Concho River), west to interior valleys and coast ranges of California, east (regularly) to Black Hills of South Dakota, western Nebraska, western Kansas (Ellis and Finney Counties), eastern Colorado, etc., casually to eastern Kansas (8 miles southeast of Lawrence, November) and Indian Territory.

*Picus torquatus* (not of Boddaert, 1783 <sup>b</sup>) WILSON, Am. Orn., iii, 1811, 31, pl. 20, fig. 3 (Montana, about lat. 46° N.; coll. Peale's Mus. <sup>c</sup>).—VIEILLOT, Nouv. Dict. d'Hist. Nat., xxvi, 1818, 80.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 46; Synop. Birds U. S., 1828, 46.—VALENCIENNES, Dict. Sci. Nat., xl, 1826, 177.—DRAPIEZ, Dict. Class., xiii, 1828, 497.—NUTTALL, Man. Orn. U. S.

<sup>a</sup> Fourteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from California (7), Oregon (1), and western Nevada (2).....	172.9	95.1	29.6	25.5	20.3
Six adult males from Rocky Mountain district (Colorado to New Mexico and Arizona).....	174.5	97.8	29.8	25.5	20.6
FEMALES.					
Six adult females from California (5) and Oregon (1).....	167.4	90.5	28.2	24.2	19.6
Eight adult females from Rocky Mountain district (Idaho and Montana to Texas and Arizona).....	170.8	92.9	28.9	24.9	19.6

<sup>b</sup> = *Cerchneipicus torquatus* (Boddaert).

<sup>c</sup> Specimen no. 2020.

- and Can., Land Birds, 1832, 577; 2d ed., 1840, 679.—AUDUBON, Orn. Biog., v, 1839, 176, pl. 416; Synopsis, 1839, 184; Birds Am., oct. ed., iv, 1842, 280, pl. 272.—BAIRD, in Stansbury's Rep. Gt. Salt Lake, 1852, 319 (Great Salt Lake Valley).—SUNDEVALL, Consp. Av. Picin., 1866, 51.
- P[icus] torquatus* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1310.—BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 370; Obs. Wils. Am. Orn., 1826, [31].—WAGLER, Syst. Av., 1827, Picus, sp. 82.
- Melanerpes torquatus* JARDINE, ed. Wilson's Am. Orn., i, 1832, 321, pl. 20, fig. 3.—SWAINSON, Classif. Birds, ii, 1837, 310.—BONAPARTE, Geog. and Comp. List, 1838, 40.—GAMBEL, Journ. Ac. Nat. Sci. Phila., 1847, 56.—HEERMANN, Journ. Ac. Nat. Sci. Phila., 1853, 270; Rep. Pacific R. R. Surv., x, pt. vi, 1859, 58 (Tejón Pass, etc., California).—NEWBERRY, Rep. Pacific R. R. Surv., vi, pt. iv, 1855, 90 (Lassens Butte, California; Cascade Mts., Oregon; habits).—SCLATER, Proc. Zool. Soc. Lond., 1858, 2 (Scott's Valley, California).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 115; Cat. N. Am. Birds, 1859, no. 96.—CASSIN, Orn. Wilkes' Expl. Exped., 1858, 242 (Oregon); Proc. Ac. Nat. Sci. Phila., 1863, 327 (Ft. Tejon, California; crit.).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 161 (Washington and Oregon; habits).—BLAKISTON, Ibis, 1862, 3 (Bow R., east base of Rocky Mts., lat. 51°); 1863, 53 (Bow R.).—LORD, Proc. Roy. Art. Inst. Woolw., iv, 1864, 112 (Brit. Columbia; nesting habits).—COUES, Ibis, 1865, 162 (Ft. Whipple, Arizona).—COOPER, Orn. Calif., 1870, 406.—AIKEN, Proc. Bost. Soc. N. H., 1872, 207 (Colorado).—STEVENSON, Rep. U. S. Geol. Surv. Terr., i, 1870, 463 (Snake R., Yellowstone R., Wind River Mts., and Bighorn Mts.).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 151 (Monument Park and Plum Creek, Colorado); Auk, iii, 1886, 428 (descr. young).—BAIRD, BREWER and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 561, pl. 54, fig. 5.—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 9 (Utah); Zool. Exp. W. 100th Merid., 1875, 397 (localities in Utah, Colorado, New Mexico, and Arizona).—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 130 (Camp Harney, e. Oregon; descr. eggs); Life Hist. N. Am. Birds, ii, 1895, 117.—RIDGWAY, Orn. 40th Parallel, 1877, 553 (Sacramento, California; Carson City and upper Humboldt Valley, Nevada); Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 376.—BELDING, Proc. U. S. Nat. Mus., i, 1879, 430 (Marysville and Stockton, California, Feb.-April).—ALLEN and BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 196 (Colorado Springs, etc., Colorado, breeding).—DREW, Auk, ii, 1885, 17 (Colorado, 5,000-8,000 ft. in summer, 4,000-7,000 ft. in winter).—BECKHAM, Auk, ii, 1885, 143 (Pueblo, Colorado).—SCOTT, Auk, iii, 1886, 427 (Santa Catalina Mts. and near Tucson, Arizona, migratory).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 408.—EVERMANN, Auk, iii, 1886, 94 (Ventura Co., California, Nov.).—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon, common resid.).—LLOYD, Auk, iv, 1887, 191 (Spring Creek, Concho R., etc., w. Texas, winter).—COOKE, Bird Migr. Miss. Val., 1888, 132 (Ellis, Kansas; Black Hills, South Dakota; San Angelo and Spring Creek, w. Texas); Bull. Col. Agric. Coll., no. 44, 1898, 162 (Rouse Junction, s. Colorado, breeding).—MERRILL, Auk, v, 1888, 255 (Ft. Klamath, Oregon, summer resid.).—SHUFELDT, Auk, v, 1888, 319 (Ft. Wingate, New Mexico, Spring).—MEARNS, Auk, vii, 1890, 254 (Mogollon Mts., etc., Arizona; habits).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 139 (int. Brit. Columbia).—MERRIAM, North Am. Fauna, no. 3, 1890, 92 (San Francisco Mt., Arizona, breeding); no. 5, 1891, 97 (Henry Fork of Snake R. and Ft. Lapwai, Idaho, breeding).—FANNIN, Check List Birds Brit. Col., 1891, 29 (e. side Cascade Mts.; Vancouver I., rare).—LAWRENCE (R. H.), Auk, ix, 1892, 355

- (Grays Harbor, Washington, Jan.).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1893, 43 (Brit. Columbia east of Cascade Mts.).—KELLOGG, Auk, xi, 1894, 260 (Finney Co., Kansas, Apr. 23, 1893).—BREWSTER, Auk, xvi, 1898, 188 (habit of storing acorns).—KOBBE, Auk, xvii, 1900, 352 (Cape Disappointment, Washington, 1 spec., Apr. 30).—CARY, Auk, 1901, 234 (Black Hills, Wyoming). [*Melanerpes*] *torquatus* BONAPARTE, Consp. Av., i, 1850, 115; Ateneo Italiano, ii, 1854, 125, (Consp. Vol. Zygod., 1854, 10).—GRAY, Hand-list, ii, 1870, 201, no. 8818.
- Melanerpes* *torquatus* GRAY, Gen. Birds, ii, 1846, 444.—RIDGWAY, Man. N. Am. Birds, 1887, 291.
- Celeus torquatus* WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 90 (Indian Territory; New Mexico).
- Melampicus torquatus* MALHERBE, Mém. Acad. Metz, xxx, 1849, 365.
- Melampicus torquatus* MALHERBE, Mon. Pict., ii, 1862, 214; iv, 1862, pl. 114, fig. 3, pl. 116, figs. 1-5.
- Asyndesmus torquatus* COUES, Proc. Ac. Nat. Sci. Phila., 1866, 56 (Ft. Whipple, Arizona, resident; descr. young); Check List, 1873, no. 311; 2d ed., 1882, no. 456; Birds Northwest, 1874, 291 (Snake R., Yellowstone R., Wind River Mts., and Bighorn Mts.; synonymy; habits); Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 617 (headwaters Saskatchewan R., 1 spec.).—RAGSDALE, Science News, i, 1879, 208 (middle Texas).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 137.—SCOTT, Auk, ii, 1885, 356 (Santa Catalina Mts., Arizona, April).—BROWN (H.), Auk, xix, 1902, 80-83 (near Tucson, Arizona, ab't in fall of 1884; habits).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 341.—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 14 (Huachuca Mts., s. Arizona, March-May, rare).—HUNN, Auk, xxiii, 1906, 421 (Piños Altos, Grant Co., New Mexico).—KERMODE, Prov. Mus. Brit. Col., 1909, 50 (Vancouver I. and interior Brit. Columbia).
- [*Asyndesmus*] *torquatus* COUES, Key N. Am. Birds, 1872, 197.—SHARPE, Hand-list, ii, 1900, 209.
- A[syndesmus]* *torquatus* COUES, Key N. Am. Birds, 2d ed., 1884, 490.
- Asyndesmus lewisi* RILEY, Proc. Biol. Soc. Wash., xviii, Oct. 17, 1905, 225, in text (ex "*Picus lewis* Drap[iez]" Gray, Gen. Birds, iii, 1849, App., p. 22; new name for *Picus torquatus* Wilson, preoccupied).—JEWETT, Auk, xxvi, 1909, 6 (Baker Co., n. e. Oregon, common).—VISHER, Auk, xxvi, 1909, 148 (w. South Dakota, especially Black Hills).—WETMORE, Condor, xi, 1909, 208 (8 m. s. e. of Lawrence, Kansas, 1 spec., Nov. 7).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 193.—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 45, pl. 5 (food).
- Melanerpes lewisi* MARSDEN, Condor, ix, 1907, 27 (feeding habits).—WARREN (E. R.), Condor, xii, 1910, 32 (Mosca and Madenas creeks, etc., Colorado).

#### Genus TRIPSURUS Swainson.

- Tripsurus* SWAINSON, Classif. Birds, ii, 1837, 311. (Type, as fixed by Gray, 1840, *Picus flavifrons* Vieillot.)
- Thripsurus* (emendation) SUNDEVALL, Consp. Av. Pict., 1866, 115.
- Zebrapicus* (not *Zebrapicus* Malherbe) BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11). (Type, by monotypy, *Zebrapicus pucherani* Malherbe.)
- Meropicus* MALHERBE, Mon. Pict., Introd., 1861, p. liii. (Type, *Picus cruentatus* Boddaert.)

Medium-sized or rather small Picidæ (wing about 100-120 mm.) resembling *Melanerpes* but differing in having the orbital region



more extensively and completely naked, tail relatively shorter (less than half as long as wing), except in *T. flavifrons*,<sup>a</sup> sides, flanks, under tail-coverts, and inner web of remiges conspicuously banded with black or dusky and white, and plumage of throat and chest not hair-like.

Bill about as long as head, moderately stout to rather slender, its width at middle of nostrils slightly greater than its depth at same point; culmen straight terminally, more or less convex subbasally or in middle portion, distinctly but not sharply ridged; gonys less than twice (about one and a half times) as long as mandibular rami, not distinctly ridged, except (sometimes) terminally; tip of bill narrowly chisel-shaped; supranasal ridge distinct for about basal half of maxilla. Nostril rather small, longitudinally oval or ovate, situated about midway between culmen and tomium, more or less covered by small antrorse, bristly-tipped, prefrontal feathers. Malar apex with antrorse bristle-like feathers minute, the feathers of chin without obvious bristly tips or else these very minute. Orbital region extensively and completely naked. Wing rather long, with longest primaries exceeding secondaries by more than length of culmen, the seventh and eighth, or sixth, seventh, and eighth, primaries longest, the ninth shorter than sixth (sometimes slightly shorter than fifth), the tenth (outermost) about one-fourth as long as ninth. Tail less than half as long as wing (except in *T. flavifrons*, in which it is slightly more than half as long), the rectrices very rigid, the middle ones short-acuminate (less so in *T. flavifrons*). Tarsus shorter than outer hind toe with claw, rather stout; outer hind toe (without claw) slightly but distinctly shorter than outer front toe (without claw).

*Coloration*.—Plumage compact, that of back (that of chest and breast also in *T. rubrifrons* and *T. cruentatus*) imbricated, that of abdomen coarse and hair-like; above mostly black or blue-black, the rump and upper tail-coverts white, the back sometimes with white bars or streaked along median line with the same; abdomen bright red; sides, flanks, and under tail-coverts conspicuously barred or banded with black and pale yellowish or whitish; adult males with red on crown (sometimes whole pileum and nape red), sometimes with yellow on forehead or nape (or both).

*Range*.—Southeastern Mexico to southern Brazil, Paraguay, Bolivia, and Peru. (Seven species.<sup>b</sup>)

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<sup>a</sup> In *T. flavifrons* the tail is but little more than half (decidedly less than three-fifths) as long as wing, about the same as in *Melanerpes erythrocephalus*.

<sup>b</sup> I have not seen *T. hargitti* Dubois ([*Melanerpes*] *hargitti* Dubois, Synop. Av., i, 1899, 68, pl. 2, fig. 2, of unknown locality), which, however, is said to be very similar to *T. cruentatus*.

KEY TO THE SPECIES AND SUBSPECIES OF *TRIPSURUS*.

- a.* Back barred with white; nape red. (*Tripsurus pucherani*.)
- b.* Back more narrowly barred; white spots or bars on wing-coverts smaller (sometimes obsolete); white transverse spots or bars on secondaries narrower; averaging larger. (Southern Honduras to western Ecuador.)
- Tripsurus pucherani pucherani* (p. 119).
- bb.* Back more broadly barred; white spots or bars on wing-coverts larger (never obsolete); white transverse spots or bars on secondaries broader; averaging smaller. (Vera Cruz to northern Honduras.)
- Tripsurus pucherani perileucus* (p. 122).
- aa.* Back with a median stripe of white (not barred); nape yellow. (Western Panama and southwestern Costa Rica.).....*Tripsurus chrysauchen* (p. 123).

**TRIPSURUS PUCHERANI PUCHERANI (Malherbe).****PUCHERAN'S WOODPECKER.**

*Adult male.*—Forehead yellow (light chrome to cadmium); rest of pileum, together with hindneck, bright red (between poppy red and carmine); back, scapulars, wings, and tail black, the first two barred (more or less broadly) with white, as are also, usually, the greater wing-coverts and secondaries, the middle coverts sometimes (but rarely) more or less marked with white; rump and upper tail-coverts white, usually immaculate, or mostly so, sometimes more or less marked with black; inner web of middle pair of rectrices sometimes with transverse spots or bars of white, but sometimes wholly black; orbital and auricular regions black, inclosing a white postocular spot, the black of auricular region confluent with a black area on sides of neck, the latter confluent with black of back; loreal and rictal regions, usually also anterior portion of malar region, chin, and upper throat, dull brownish white (this color sometimes occupying nearly whole of throat and malar region), passing into plain yellowish olive or yellowish drab <sup>a</sup> on foreneck, chest, and upper breast; lower breast, sides, flanks, and under tail-coverts light dull wax yellowish rather broadly barred with black, the bars on under tail-coverts more U- or V-shaped; abdomen bright red; under wing-coverts white, barred with black, those near edge of wing more heavily so (sometimes mostly black); inner webs of remiges dusky with broad bars or transverse spots of white; bill dull black or slate-black, usually somewhat paler at basal portion of gonys; legs and feet dusky grayish (in dried skins); length (skins), 174–200 (184.2); wing, 107.5–120 (114.3); tail, 53.5–63 (58.6); culmen, 22.5–28 (23.9); tarsus, 18.5–21 (19.5); outer anterior toe, 16–19 (17.4).<sup>b</sup>

<sup>a</sup> Nothing closely approximating this color is shown in the author's "Nomenclature of Colors" (edition of 1886).

<sup>b</sup> Thirty specimens.

*Adult female*.—Similar to the adult male, but red of head restricted to nape and hindneck, the crown and occiput mostly black, but the former with anterior and median portions dull whitish or pale smoke grayish; length (skins), 170–202 (173); wing, 106–117 (112.4); tail, 55–61 (57.5); culmen, 22.5–26.5 (24.2); tarsus, 17.5–20 (19.1); outer anterior toe, 16–19 (17.2).<sup>a</sup>

*Young male*.—Similar to the adult male, but prefrontal region much duller yellow, pileum and nape duller red, flanks and under tail-coverts less distinctly barred, and chest frequently more or less distinctly barred with dusky.

*Young female*.—Similar to the young male, but occiput and sides of crown black, the antero-median portion of crown and posterior part of forehead pale grayish buffy barred or spotted with dusky.

Southeastern Honduras (Rio Segóvia), through Nicaragua (Greytown; Bluefields; Rio Escondido; Los Sábalos; Rio San Juan; Peña Blanca; San Rafaél del Norte; Sucuyá; Matagalpa; Rama; La Libertád; Chontales; Rio Grande; Tuma), Costa Rica (San José; Rancho Redondo; Cartago; Naranjo de Cartago; Orosí; Turrialba; Rio Reventazón; Guayabo; Bonilla; Jiménez; Carrillo; Guápiles; Cuábre;

<sup>a</sup> Fifteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
One adult male from western Ecuador (Guayaquil).....	117.5	57	26	19	18
One adult male from Colombia (Los Tambos).....	110.5	62	24.5	18	17
Ten adult males from eastern Panama.....	112.5	58.5	25.4	19.2	17.3
Ten adult males from Costa Rica.....	113.6	59.2	25.9	19.7	17.5
Seven adult males from Nicaragua.....	116.7	59	25.6	19.4	17.5
Three adult males from southern Honduras (Rio Segovia).....	117	55.5	25.5	19.7	17.3
Five adult males from northern Honduras ( <i>T. p. perileucus</i> )....	112.9	57.7	25.9	19.4	17.2
Six adult males ( <i>T. p. perileucus</i> ) from British Honduras.....	112.4	56.4	23.6	19	17
Four adult males ( <i>T. p. perileucus</i> ) from Guatemala (3) and Chiapas (1).....	111.1	55.5	23	19.4	16.3
Two adult males ( <i>T. p. perileucus</i> ) from Tabasco (1) and Vera Cruz (1).....	111.5	58	22.8	19.5	17.3
FEMALES.					
Three adult females from eastern Panama.....	111.2	57.3	23.5	19.5	16.7
Ten adult females from Costa Rica.....	112.4	58.8	24.2	19.1	17.4
One adult female from Nicaragua.....	110.5	55	22.5	18	16
One adult female from southern Honduras (Rio Segovia).....	117	57.5	26.5	19.5	17
Three adult females ( <i>T. p. perileucus</i> ) from northern Honduras...	111	57.7	24.5	18.8	16
One adult female ( <i>T. p. perileucus</i> ) from British Honduras....	108	52	23.5	18	16.5
Four adult females ( <i>T. p. perileucus</i> ) from Guatemala.....	110.8	55.7	22.3	18.4	16.6
Three adult females ( <i>T. p. perileucus</i> ) from Tabasco (1), Oaxaca (1) and Vera Cruz (1).....	108.7	56.2	23.3	18.5	16.5



Guácimo; San Carlos; El Hogár; Pacuarito; Talamanca; Río Sicsola; La Vijagua), Panamá (Lion Hill; Frijole; Verágua) and Colombia (Los Tambos) to western and central Ecuador<sup>a</sup> (Guayaquil; Babahoyo; Esmeraldas; Yaguachi; Santa Rita; Quito).

(??)[*Picus carolinus*]  $\delta$ . LATHAM, Index Orn., i, 1790, 231 (based on *Picus varius indicus* Gerini, Orn., ii, 48, pl. 171).

*Picus aurifrons* (not of Wagler) LESSON, Rev. Zool., 1839, 102 ("Sumatra").—WAGNER, Wiegmann's Archiv für Naturg., 1841, 100.

*Zebrapicus pucherani* MALHERBE, Rev. et Mag. de Zool., i, Nov., 1849, 542 ("Tobago"; coll. Brit. Mus.?); Mon. Picid., ii, 1862, 227, part (Santa Marta, Colombia; "Tobago"); iv, 1862, pl. 103, figs. 1, 2.

[*Zebrapicus*] *pucherani* BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11).

[*Centurus*] *pucherani* BONAPARTE, Consp. Av., i, 1850, 120 ("America meridionalis").—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101, part.

C[*enturus*] *pucherani* REICHENBACH, Handb. Scansores, Picinæ, 1854, 411 ("Tobago").

*Centurus pucherani* SCLATER, Cat. Am. Birds, 1862, 342, part (Babahoyo, w. Ecuador).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 299 (Panama); viii, 1867, 183 (Greytown, Nicaragua).—CABANIS, Journ. für Orn., 1862, 328 (Ecuador; Central America; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 280 (Bluefields, Nicaragua).—SALVIN, Ibis, 1872, 320 (Chontales, Nicaragua).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 49 (San Carlos and Naranjo, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 591 (Rio Segovia, Honduras).

*Centurus pucheranii* SCLATER, Proc. Zool. Soc. Lond., 1860, 286 (Babahoyo, w. Ecuador; crit.), 297 (Esmeraldas, w. Ecuador).—SALVIN and SCLATER, Ibis, 1860, 43 (Coban and Yzabal, Guatemala).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 367 (Panama).—FERRY, Pub. 146, Field Mus. N. H., Orn. Ser., i, 1910, 276 (Guayabo and Limón, Costa Rica).

*Melanerpes pucherani* RIDGWAY, Proc. U. S. Nat. Mus., iv, June 2, 1881, 95, 118, in text.—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 571 (Yaguachi, w. Ecuador; crit.).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 406 (Los Sábalos, Nicaragua).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 107 (Yaguachi, w. Ecuador).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 124 (Cartago, Jimenéz, Rancho Redondo, and Talamanca, Costa Rica).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 164, part (Chontales, Nicaragua; San José and Turrialba, Costa Rica; Panama; Babahoyo and Santa Rita, w. Ecuador).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 519 (Rio Escondido, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 415, part (Rio Segovia, Honduras; Bluefields, Los Sábalos, Chontales, La Libertad, Rama, Rio Escondido, and Greytown, Nicaragua; Rio Frio, San José, San Carlos, Naranjo, Turrialba, Cartago, Jimenez, Rancho Redondo, and Talamanca, Costa Rica; Lion Hill, Panama; Colombia; w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 (Loma del Leon, Panama); Bull. Mus. Comp. Zool., xxxix, 1903, 146 (Yaruca, Honduras).—MENEGAUX, Bull. Soc. Philom., 1908, 4 (Quito, Ecuador).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 586 (Caribbean slope, Costa Rica; habits).

<sup>a</sup> I have seen only one specimen from Ecuador, an example from Guayaquil in the U. S. National Museum collection.

*Melanerpes pucherani* RIDGWAY, Man. N. Am. Birds, 1887, 291, part.

[*Melanerpes pucherani* SHARPE, Hand-list, ii, 1900, 210, part.

*Tripsurus pucherani* SALVADORI, Atti Soc. Torino, iv, 1868, 183 (Costa Rica).

(?) *Picus gerinii* TEMMINCK, Planches Col., iv, livr. 73, July, 1827, in text to *P. superciliaris* (based on *Picus varius indicus* Gerini, Orn., ii, 48, pl. 171; *Picus carolinus* var.  $\delta$ . Latham, Index Orn., i, 231).

(?) *Zebrapicus gerinii* MALHERBE, Mon. Picid., ii, 1862, 231.

*Picus gerini* SUNDEVALL, Consp. Av. Picin., 1866, 55, part (Colombia; Ecuador).

*Centurus gerini* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 131 (San José, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 364 (Costa Rica).

### TRIPSURUS PUCHERANI PERILEUCUS (Todd).

#### WHITE-BARRED WOODPECKER.

Similar to *T. p. pucherani*, but back, scapulars, and wings more broadly barred with white, the middle coverts usually distinctly barred, spotted, or terminally margined with white, and more frequently with white markings on inner web of middle rectrices; averaging slightly smaller.

*Adult male*.—Length (skins), 170–188 (179); wing, 106–118 (112.1); tail, 53–61 (56.8); culmen, 20.5–28 (24); tarsus, 18.5–20 (19.2); outer anterior toe, 15.5–17.5 (16.9).<sup>a</sup>

*Adult female*.—Length (skins), 165–193 (175); wing, 107.5–115 (110); tail, 52–59 (56.1); culmen, 21–25 (23.3); tarsus, 17.5–19 (18.5); outer anterior toe, 15–17.5 (16.5).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Santecomapám; Orizaba; Uvero; Buena Vista), Puebla (Huehuetán; Chapulco; Tehuacán), Oaxaca (Cuicuitlán; Oaxaca City; mountains near Santo Domingo), Tabasco (Teapa) and Chiapas (Palenque) and southward through Guatemala (Cobán; Chiséc; Choctúm; Yzabál; sources of Rio de la Pasión) to British Honduras (Toledo District; Manatee River; near Manatee Lagoon) and northern Honduras (Truxillo; Yaruca; Omoa; San Pedro).

*Zebrapicus pucherani* MALHERBE, Mon. Picid., ii, 1862, 227, part (Mexico; Guatemala).

*Centurus pucherani* SCLATER, Proc. Zool. Soc. Lond., 1857, 229 (Santecomapam, Vera Cruz); Cat. Am. Birds, 1862, 342, part (Orizaba, Vera Cruz).—MOORE, Proc. Zool. Soc. Lond., 1859, 60 (Omoa, Honduras).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).—BOUCARD, Liste Ois. récol. Guat., 1878, 27.—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 583 (Truxillo, Honduras).

*Centurus pucheranii* SCLATER and SALVIN, Ibis, 1859, 136 (Omoa, Honduras).—SALVIN and SCLATER, Ibis, 1860, 43 (Coban and Yzabal, Guatemala).

*Melanerpes pucherani* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 164, part (Orizaba, Vera Cruz; Vera Paz, sources of Rio de la Pasión, Chisec, and Yzabal, Guatemala; Brit. Honduras; Honduras).—SALVIN and GODMAN,

<sup>a</sup> Seventeen specimens.

<sup>b</sup> Eleven specimens.

Biol. Centr.-Am., Aves, ii, 1895, 415, part (Orizaba, Santecomapam, and Uvero, Vera Cruz; Brit. Honduras; Coban, Choctum, Chisec, and Yzabal, Guatemala; Omoa, San Pedro, and Truxillo, Honduras).

*M[elanerpes] pucherani* RIDGWAY, Man. N. Am. Birds, 1887, 291, part.

[*Melanerpes*] *pucherani* SHARPE, Hand-list, ii, 1900, 210, part.

*Picus gerini* (not *P. gerinii* Temminck?) SUNDEVALL, Consp. Av. Picin., 1866, 55, part (Guatemala).

?*Centurus gerinii* GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 101 (Honduras?).

?[*Centurus*] *gerinii* GRAY, Hand-list, ii, 1870, 197, no. 8765.

*Melanerpes pucherani perileucus* TODD, Proc. Biol. Soc. Wash., xxiii, Dec. 6, 1910, 153 (near Manatee, Brit. Honduras; coll. Carnegie Mus.).

### TRIPSURUS CHRYSAUCHEN (Salvin).

#### GOLDEN-NAPED WOODPECKER.

*Adult male*.—Forehead and hindneck bright yellow (chrome or pale chrome, the forehead sometimes cadmium yellow); crown and occiput bright poppy red or scarlet-vermilion; back, scapulars, and wing-coverts deep black, faintly glossed with bluish, the median line of back broadly streaked with white; rump and upper tail-coverts white, the former sometimes barred with black on upper lateral portion; tail brownish black; remiges and primary coverts brownish black, the inner secondaries usually margined terminally and more or less spotted on edges with white; supra- and post-ocular regions, auricular region, and sides of neck uniform deep, slightly glossy, black, the postocular region usually with a more or less distinct elongated patch or streak of white; malar region, chin, and throat plain light yellowish gray, the suborbital region more whitish; foreneck, chest, breast, and sides of upper abdomen deeper yellowish gray, strongly washed or tinged with wax yellow or saffron yellow; lower abdomen and median portion of upper abdomen bright scarlet-vermilion or scarlet; sides, flanks, and under tail-coverts broadly and irregularly barred with black and whitish; under wing-coverts similarly marked, but black predominating along edge of wing; inner webs of remiges with large quadrate spots of white (in transverse series), except on distal portion of outer and longer primaries; bill blackish, paler on lower basal portion of mandible; legs and feet dusky (in dried skins); length (skins), 162–181 (174); wing, 108–116 (112.2); tail, 51–60.5 (55); culmen, 23.5–27.5 (25.7); tarsus, 19–20.5 (19.5); outer anterior toe, 16.5–19 (17.8).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without any red on head, the duller yellow of pileum interrupted by a more or less broad, crescentic band of black across crown; length (skins), 152–186

<sup>a</sup> Fifteen specimens.



(168); wing, 105–116 (110); tail, 48.5–60 (53.5); culmen, 21.5–25 (23.3); tarsus, 18–19.5 (18.8); middle toe, 16–18 (17.1).<sup>a</sup>

*Young female*.—Similar to the adult female, but frontal area yellowish olive, color of chest, etc., lighter and more olivaceous, more grayish posteriorly, and faintly spotted or mottled with darker (the upper chest with a few small spots or short streaks of blackish), and blackish bars of flanks, etc., much less distinct and less regular.

Western Panamá (Bugaba and Divala, Chiriquí) and southwestern Costa Rica (Térraba; Boruca; Lagarto; Paso Real; Pozo Azul de Pirris; Pozo del Rio Grande; El General).

*Melanerpes chrysauchen* SALVIN, Proc. Zool. Soc. Lond., 1870, 213 (Bugaba, Chiriqui, Panama; coll. Salvin and Godman).—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 96, in text.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 160 (Bugaba, Chiriqui).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 537 (Pozo Azul, s. w. Costa Rica); Expl. Zool. Merid. Costa Rica, 1893, 46 (Lagarto and Térraba, s. w. Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 414, pl. 60.—BANGS, Auk, xxiv, 1907, 292 (Boruca, Paso Real, and Pozo del Rio Grande, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 536 (s. w. Costa Rica; habits).

[*Melanerpes*] *chrysauchen* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.—SHARPE, Hand-list, ii, 1900, 210.

[*Picus*] *chrysauchen* GIEBEL, Thes. Orn., iii, 1876, 150.

#### Genus CHLORONERPES Swainson.

*Chloronerpes* SWAINSON, Classif. Birds, ii, 1837, 307. (Type, *Picus rubiginosus* Swainson.)

*Lampropicus* MALHERBE, Mon. Pict., Introd., 1861, p. liii. (Type, *Picus aurulentus* Temminck.)

*Craugasus*,<sup>b</sup> part, CABANIS and HEINE, Mus. Hein., iv, heft 2, Oct. 9, 1863, 157. (New name for *Chrysopicus* Bonaparte (not *Chrysopicos* Malherbe) and *Lampropicus* Malherbe, on grounds of purism.)

Medium-sized Picidæ (wing 98–137 mm.) closely similar in structural characters to *Tripsurus*, *Centurus*, etc., but differing conspicuously in coloration, the upper parts mostly plain olive-greenish, under parts barred with olive, or dusky, and yellowish, and inner

<sup>a</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from southwestern Costa Rica.....	112.1	54.6	26	19.5	17.9
Five adult males from western Panama.....	112.4	55.7	25	19.4	17.4
FEMALES.					
Ten adult females from southwestern Costa Rica.....	110.2	53.9	23.3	18.8	17.1
One adult female from western Panama.....	108	50.5	22.5	18.5	16.5

<sup>b</sup> “Von *κραύρατος* (= *κραυρός*, Specht).” (Cabanis and Heine.)

webs of remiges broadly edged or spotted with vinaceous-cinnamon or yellow, the sides of head or the throat sometimes bright yellow.

Bill shorter than head, rather broad and depressed basally (decidedly broader than deep at anterior end of nostrils), regularly wedge-shaped in vertical profile; culmen straight or, sometimes, very faintly convex, distinctly (usually sharply) ridged; gonys slightly to decidedly longer than mandibular rami, faintly concave anteriorly, faintly convex and slightly prominent basally; supranasal ridge very distinct, extending for basal half or more of maxilla, much nearer to culmen than to tomium (except anteriorly). Nostril rather small, longitudinally oval or elliptical, situated rather nearer to tomium than to culmen, at least partly covered by small bristle-like antrorse prefrontal feathers. Feathers of malar apex small, bristle-like, antrorse, or semiantrorse, those of chin with small bristle-like, semi-antrorse tips. Orbital region naked, including margin of eyelids except posterior portion of the lower, which sometimes has a few minute feathers. Wing rather long and pointed, the longest primaries exceeding secondaries by about one-fourth the length of wing; sixth and seventh or sixth, seventh, and eighth primaries longest, the ninth equal to or longer than third, the tenth (outermost) one-third to one-half as long as ninth. Tail slightly to decidedly more than half as long as wing, the middle rectrices gradually acuminate. Tarsus decidedly longer than either outer toe without claw, the outer hind toe decidedly shorter than the outer front toe; tarsi and toes rather slender, but claws large and strongly curved.

*Coloration*.—Upper parts mostly plain olive-green or oil-green; under parts conspicuously barred with olive, or dusky, and yellowish; inner webs of remiges broadly edged, or banded, with vinaceous-cinnamon or more narrowly edged with yellow; sides of head or throat sometimes bright yellow; adult males with more or less of the pileum and a broad malar stripe (sometimes throat also) bright red, adult females with red only on nape or part of pileum or with none at all.

*Range*.—Middle Mexico to southern Brazil, Paraguay, Bolivia, and Peru. (About twenty species and subspecies.)

#### KEY TO THE SPECIES AND SUBSPECIES OF CHLORONERPES.

- a. Under wing-coverts and edges of inner webs of remiges light yellow; remiges not barred, and with yellow shafts.
- b. Chin and throat whitish, streaked or barred with blackish or grayish; adults with only part, or none, of pileum crimson; adult females with malar region whitish streaked with grayish or dusky.
- c. Pileum and nape uniform slate-gray (without red in either sex). (Southwestern Mexico)..... **Chloronerpes auricularis** (p. 128)
- cc. Pileum crimson laterally (at least posteriorly); nape wholly crimson.

- d. Chest and breast irregularly barred or squamated; larger (wing averaging more than 130, tail more than 85). (Eastern Mexico.)

***Chloronerpes aeruginosus* (p. 129)**

- dd. Chest and breast regularly barred; smaller (wing averaging less than 130, tail less than 80).

- e. Whole under parts barred. (*Chloronerpes rubiginosus*.)

- f. Larger (wing 114–133.5, averaging much more than 115); lateral rectrices usually not distinctly, if at all, barred; adult males with red on sides of pileum broader, never interrupted above eye.

- g. Chest more narrowly barred with yellow, the yellow bars usually less than half as broad as the olivaceous interspaces.

- h. Posterior under parts less distinctly barred; bill stouter.

- i. Color of back, etc., averaging more greenish or yellowish olive; olivaceous bars on chest less dark, less, or not at all, tinged with orange. (Southeastern Mexico to Nicaragua.)

***Chloronerpes rubiginosus yucatanensis* (p. 131).**

- ii. Color of back, etc., averaging more golden or orange olive; olivaceous bars on chest darker, more or less strongly tinged with orange. (Costa Rica and Panama.)

***Chloronerpes rubiginosus uropygialis* (p. 133).**

- hh. Posterior under parts more strongly barred; bill more slender. (Andes of Mérida, Venezuela.)

***Chloronerpes rubiginosus meridensis* (extralimital).<sup>a</sup>**

- gg. Chest more broadly barred with yellow, the yellow bars more than half as wide as the very dark olive interspaces. (Sierra Nevada de Santa Marta, Colombia.)

***Chloronerpes rubiginosus alleni* (extralimital).<sup>b</sup>**

- ff. Smaller (wing 98–115, averaging less than 112); lateral rectrices distinctly barred, at least on outer web; adult males with red on sides of pileum narrower, frequently interrupted above eye.

- g. Back, etc., yellowish olive; chest barred with pale yellowish or yellowish white and dull blackish, the yellowish bars broader. (Arid coast district of Venezuela.)

***Chloronerpes rubiginosus rubiginosus* (extralimital).<sup>c</sup>**

- gg. Back, etc., bright tawny-olive; chest barred with light yellowish and dark olive, the yellowish bars narrower.

- h. Smaller (wing 98–106, tail 55–62, culmen 20–23.5, tarsus 18.5–20.5). (Island of Trinidad.)

***Chloronerpes rubiginosus trinitatis* (extralimital).<sup>d</sup>**

<sup>a</sup> *Chloronerpes rubiginosus meridensis* Ridgway, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 33 (Merida, Venezuela; coll. Am. Mus. Nat. Hist.).

<sup>b</sup> *Chloronerpes yucatanensis alleni* Bangs, Proc. New Engl. Zool. Club, iii, March 31, 1902, 83 (San Sebastian, Santa Marta, Colombia; coll. E. A. and O. Bangs).

<sup>c</sup> *Picus rubiginosus* Swainson, Zool. Illustr., ser. 1, i, no. 3, Dec., 1820, pl. 14 and text ("Spanish Main"; type locality subsequently fixed by Hartert as Cumana, Venezuela; coll. E. Falkner); Sundevall, Consp. Picin., 1866, 69.—*Chloronerpes rubiginosus* Swainson, Classif. Birds, ii, 1837, 308; Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 86, part.—*Chloronerpes rubiginosus rubiginosus* Hellmayr, Novit. Zool., xiii, 1906, 38, part (Los Palmes and Cumaná, Venezuela; crit.).

<sup>d</sup> *Chloronerpes rubiginosus rubiginosus* Hellmayr, Novit. Zool., xiii, 1906, 38, part (Caparo, Valencia, Seelet, and Chaguanas, Trinidad; crit.).—*Chloronerpes rubiginosus trinitatis* Ridgway, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 32 (Princetown, Trinidad; coll. Am. Mus. Nat. Hist.).



hh. Larger (wing 106–115, tail 61–67.5, culmen 22–25, tarsus 19.5–21).  
(Island of Tobago.)

***Chloronerpes rubiginosus tobagensis*** (extralimital).<sup>a</sup>

ee. Posterior half of under parts immaculate yellow or with sides and flanks very indistinctly barred. (Central Peru.)

***Chloronerpes chrysogaster*** (extralimital).<sup>b</sup>

bb. Chin and throat black spotted with white (sometimes uniform black in young); adults with whole pileum crimson; adult female with malar region black speckled with whitish. (State of Antioquia, central Colombia, to western Ecuador.).....***Chloronerpes gularis*** (extralimital).<sup>c</sup>

aa. Under wing-coverts and greater part of remiges light cinnamon-rufous, the latter sometimes with spots or broad bars of dusky (mostly concealed) on distal portion, their shafts whitish or light cinnamon and dusky.

b. Outer webs of remiges plain golden olive or deep citrine; chin and throat immaculate dull light orange-yellow or antimony yellow; chest regularly barred with dull light orange-yellow and dusky olive. (*Chloronerpes chrysochlorus*.)

c. Auricular region dusky olive; distal portion of primaries less extensively dusky. (Southern Brazil; Paraguay.)

***Chloronerpes chrysochlorus chrysochlorus*** (extralimital).<sup>d</sup>

cc. Auricular region lighter olive; distal portion of primaries more extensively dusky. (Eastern Panama.)....***Chloronerpes chrysochlorus aurosus*** (p. 134).

bb. Outer webs of remiges spotted with cinnamon-rufous; chin and throat uniform sooty or grayish brown or spotted or streaked with sooty brownish and dull whitish; chest olive spotted with dull whitish.

c. A broad suborbital stripe, together with chin and upper throat (or streaks on same), dull buffy whitish. (Panama.)....***Chloronerpes callopterus*** (p. 135).

<sup>a</sup> *Chloronerpes rubiginosus tobagensis* Ridgway, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 33 (Tobago; coll. U. S. Nat. Mus.).

<sup>b</sup> *Chloronerpes chrysogaster* Berlepsch and Stolzmann, Proc. Zool. Soc. Lond., vol. 2, pt. 1, Oct., 1902, 32 (Garita del Sol and La Gloria, central Peru; coll. Branicki Mus.).

Of this very strongly characterized form, the U. S. National Museum possesses a fine adult male from Vitoc, Garita del Sol. If not a distinct species it certainly is the most distinct of all the forms of *C. rubiginosus*.

<sup>c</sup> *Chloronerpes gularis* Hargitt, Ibis, sixth ser., i, no. 2, April, 1889, 230 (Santa Elena, Antioquia, Colombia); Cat. Birds Brit. Mus., xviii, 1890, 86.—(?)*Chloronerpes rubripileus* Salvadori and Festa, Boll. Mus. Zool., etc., Torino, xv, no. 368, Feb. 19, 1900, 14 (Foreste del Rio Peripa, w. Ecuador; coll. Turin Mus.).

The U. S. National Museum possesses an adult male of a *Chloronerpes* from Guayaquil, western Ecuador, which seems to be *C. rubripileus* of Salvadori and Festa. It has the entire pileum crimson, the malar patches crimson, and the throat spotted with black and white. It is evidently closely related to *C. gularis* Hargitt, but the specimen in question is in badly abraded plumage, and therefore a satisfactory comparison can not be made, especially since the only examples examined of *C. gularis* are two females, one of them a young bird.

<sup>d</sup> *Picus chrysochlorus* Vieillot, Nouv. Dict. d'Hist. Nat., xxvi, 1818, 98 (Paraguay; based on *Carpintero verde dorado* Azara, Apunt. Parag., ii, 317).—*C[raugiscus] chrysochlorus* Cabanis and Heine, Mus. Hein., iv, 1863, 159 (Brazil).—*Chloronerpes chrysochlorus* Gray, List Birds Brit. Mus., Pictidæ, 1868, 106; Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 72.—*Chloropicus chrysochlorus* Malherbe, Mon. Pic., ii, 1862, 141, pl. 84, figs. 1, 2.—*Picus macrocephalus* Spix, Av. Bras., i, 1824, 60, pl. 53, fig. 2.—[*Chloronerpes*] *macrocephalus* Swainson, Classif. Birds, ii, 1837, 308.—[*Chloronerpes*] *brasiliensis* (not *Picus brasiliensis* Swainson) Reichenbach, Scansores, Pictinæ, 1854, 351, pl. 622, figs. 4148, 4189.—*Chloropicus brasiliensis* Malherbe, Mon. Pictid., ii, 1862, pl. 85, figs. 1, 2.

- cc. Suborbital and auricular regions, chin, and throat light brown or olive, the first sometimes partly crimson. (*Chloronerpes simplex*.)
- d. Spots on chest smaller; yellowish of posterior under parts paler, bill larger (culmen in adult male 19-21.5). (Costa Rica and Nicaragua.)
- Chloronerpes simplex simplex* (p. 136).**
- dl. Spots on chest larger, more transverse; yellowish of posterior under parts deeper, more buffy; bill smaller (culmen in adult male, 18). (Northern Honduras.).....***Chloronerpes simplex allophyus* (p. 138).**

**CHLORONERPES AURICULARIS** Salvin and Godman.

**GODMAN'S WOODPECKER.**

*Adult male*.—Pileum and hindneck uniform light gray (between no. 6 and no. 7); back and scapulars plain light olive-green more or less tinged or intermixed with gray, the rump and upper tail-coverts similar but narrowly barred with pale yellow or yellowish white; wings similar in color to back, etc., but rather brighter olive-green, the terminal portion of inner webs of remiges dull grayish brown; tail light yellowish olive-green, the middle rectrices dusky terminally and with dusky shafts, the lateral rectrices sometimes with broad indistinct bars or transverse spots of darker; loreal, orbital, and auricular regions dull pale brownish buff or brownish white (sometimes approaching dull broccoli brown), the auricular region (at least posterior portion) sometimes indistinctly barred with grayish; malar region bright crimson; chin and upper throat dull whitish clouded or irregularly flecked with dull grayish, the lower throat more regularly barred with the same; foreneck and chest olive, rather irregularly but sharply barred with yellowish white or pale yellowish (the bars of the latter color sometimes nearly as wide as the olive interspaces, sometimes much narrower), the remaining under parts more broadly barred with olive and pale yellowish; under wing-coverts pale yellow (between straw and primrose, sometimes tinged with canary), sometimes sparsely barred (narrowly), at least near edge of wing, with dusky; inner webs of remiges yellowish gray distally, broadly edged basally with pale creamy yellow, their shafts clear sulphur or light canary yellow; under surface of lateral rectrices light olive-yellowish, the shafts pale yellow; bill grayish black, the mandible paler (more horn color) basally; feet dusky grayish (in dried skins); length (skins), 202-222 (210); wing, 116.5-122 (120.2); tail, 67-72 (69.3); culmen, 25-26 (25.5); tarsus, 19.5-21 (20.3); outer anterior toe, 16.5-18.5 (17.7).<sup>a</sup>

*Young male*.—Similar to the adult male but red of malar region duller (the gray at base of feathers considerably exposed), and sides of hindneck very slightly tinged or intermixed with red.

*Adult female*.—Similar to the adult male, but malar region streaked with dull gray and whitish; length (skins), 206-212 (209); wing,

<sup>a</sup> Three specimens.

119–121.5 (120); tail, 67.5–72 (70); culmen, 23–24.5 (23.7); tarsus, 19–20.5 (19.8); outer anterior toe, 16.5–18 (17.2).<sup>a</sup>

Southwestern Mexico, in States of Guerrero (Xautipa, in Sierra Madre del Sur), Jalisco (Hacienda San Marcos, 5,200 feet; Sal se Puerdes; Hacienda Santa Gertrudis; Minerál de San Sebastián), and southern Sinaloa (Plomosas; Mount Juan Lisiarraga, 5,500 feet).

*Chloronerpes auricularis* SALVIN and GODMAN, Ibis, July, 1889, 381 (Xautipa, Sierra Madre del Sur, Guerrero, Mexico; coll. Salvin and Godman); Biol. Centr.-Am., Aves, ii, 1895, 408, pl. 59a, fig. 3.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 83.

[*Chloronerpes auricularis* SHARPE, Hand-list, ii, 1900, 205.

*Chloronerpes godmani* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 83 (Hacienda San Marcos, Jalisco, Mexico, alt. 5,200 ft.; coll. Brit. Mus.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 409, pl. 59a, figs. 1, 2 (Hacienda San Marcos, H. de Sta. Gertrudis, and Mineral de San Sebastian, Jalisco).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 352 (Juan Lisiarraga, s. Sinaloa).

[*Chloronerpes godmani* SHARPE, Hand-list, ii, 1900, 205.

### CHLORONERPES ÆRUGINOSUS (Malherbe).

#### LICHTENSTEIN'S WOODPECKER.

*Adult male*.—Pileum plain slate-gray; hindneck bright crimson, this color extending forward laterally, on each side of occiput and crown, to or beyond posterior angle of eye; back and scapulars plain olive-green (varying from a more grayish to a more “golden” hue,<sup>b</sup> the rump and upper tail-coverts similar but usually more or less barred, narrowly, with pale yellowish; wings plain golden brown (more yellowish than tawny-olive), duller on primaries, especially on terminal portion of inner webs, the shafts of remiges yellowish distally; under wing-coverts light creamy yellow (maize yellow), those near edge of wing barred with blackish; inner webs of remiges mostly yellowish olive, but proximal portion (nearly all on secondaries) broadly edged with light creamy yellow, the shafts clear canary yellow; tail olive or olive-brownish basally, blackish distally except the lateral rectrices, the shafts of middle rectrices black or blackish brown; under surface of lateral pair of rectrices olive or yellowish olive, the inner portion of inner web, more or less broadly, dusky; loreal region dull buff or cream-buff, the suborbital region and superciliary region (narrowly) similar but paler; auricular region grayish white, narrowly streaked with dusky grayish; malar region crimson, the anterior end, more or less extensively, grayish; chin and throat grayish white (sometimes tinged with pale yellow), rather broadly streaked with blackish or dusky grayish; foreneck and chest olive, irregularly barred with pale olive-yellow, this pattern passing grad-

<sup>a</sup> Three specimens.

<sup>b</sup> As if washed with wax yellow.



ually on more posterior under parts to pale citron yellow, broadly and rather regularly barred with olive, the under tail-coverts, however, with the yellowish bars much narrower than the olive interspaces; bill grayish black; iris brown;<sup>a</sup> feet dusky grayish (bluish ash in life);<sup>a</sup> length (skins), 221–261 (240); wing, 130.5–137 (133.6); tail, 81.5–90 (86.3); culmen, 25–29 (26.6); tarsus, 23–25 (23.7); outer anterior toe, 20–21 (20.4).<sup>b</sup>

*Young male*.—Similar to the adult male, but under parts of body much less distinctly barred (sometimes whole abdomen and flanks nearly immaculate) and much duller yellowish; chest and foreneck regularly barred, but the bars less strongly contrasted; and red of nape extending forward, along sides of crown and forehead, to base of bill.

*Adult female*.—Similar to the adult male, but malar region pale gray or grayish white, narrowly streaked with blackish, and red of nape not extending laterally to eye; length (skins), 217–250 (226); wing, 127.5–135.5 (130.9); tail, 78–89 (85.5); culmen, 23–25.5 (24.2); tarsus, 22–23.5 (22.6); outer anterior toe, 18–19.5 (18.7).<sup>b</sup>

Eastern Mexico, in States of Vera Cruz (Córdoba; Jalapa; Orizaba; Miradór; Coátepec; Papantla), Puebla (Metlaltoyuca), San Luís Potosí (Jilitla), Nueva León (Cerro de la Silla; Boquillo), and Tamaulipas (Victória; Sierra Madre, above Victória; Tampico; Alta Mira; Rio Pilón; Rampahuila; Rio Santa; Rio de la Cruz; Santa Leonora; Guiaves; Galindo; Potrero; Rio Martinez).

(?) *Picus poliocephalus* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, 1 (Mexico); Journ. für Orn., 1863, 55 (reprint).

*C[hloronerpes] rubiginosus* (not of Swainson) GRAY, Gen. Birds, ii, 1846, 443.

*Chloronerpes rubiginosus* GRAY, Gen. Birds, ii, 1846, pl. 110.

*C[hloronerpes] æruginosus* GRAY, Gen. Birds, iii, 1849, App., p. 22 (ex Lichtenstein manuscript); nomen nudum!

*Chloronerpes æruginosus* GRAY, List Picidæ Brit. Mus., 1868, 104 (Cordova, Vera Cruz).—SCLATER, Cat. Am. Birds, 1862, 339 (Jalapa, Vera Cruz).—SUMICHRIST, La Naturaleza, v, 1882, 240, part (Orizaba, Vera Cruz).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 81 (Tampico, and Sierra Madre above Victoria, Tamaulipas; Cordova, Jalapa, Orizaba, and Coatepec, Vera Cruz; Atoyac, Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 406.—RICHMOND, Proc. U. S. Nat. Mus., xviii, 1896, 629 (Alta Mira, Tamaulipas).—PHILLIPS, Auk, xxviii, 1911, 75 (Rampahuila, Rio Santa, Rio de la Cruz, Rio Martinez, Santa Leonora, Guiaves, Galindo, and Potrero, Tamaulipas).

[*Chloronerpes*] *aeruginosus* LICHTENSTEIN, Nom. Mus. Berol., 1854, 76.

[*Chloronerpes*] *æruginosus* BONAPARTE, Ateneo Italiano, ii, 1854, 124 (Consp. Volucr. Zygod., 1854, 9).—GRAY, Hand-list, ii, 1870, 198, no. 8775.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.—SHARPE, Hand-list, ii, 1900, 205.

*C[hloronerpes] aeruginosus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 161 (Jalapa).

<sup>a</sup> According to Sumichrast.

<sup>b</sup> Ten specimens.

*C[hloronerpes] æruginosus* SCLATER, Proc. Zool. Soc. Lond., 1864, 177 (near City of Mexico).

*Picus æruginosus* SUNDEVALL, Consp. Av. Picin., 1866, 70.

*Chrysopicus æruginosus* MALHERBE, Mon. Pict., ii, 1862, 171; iv, 1862, pl. 90, figs. 1, 2.

*Chloronerpes yucatanensis* (not *Picus yucatanensis* Cabot) SCLATER, Proc. Zool. Soc. Lond., 1856, 307 (Cordova, Vera Cruz; diagnosis; crit.); 1859, 367 (Jalapa).—

CABANIS, Journ. für Orn., 1862, 321 (diagnosis; Mexico).

*Chloronerpes yucatanensis* CABANIS, Journ. für Orn., 1862, 321 (Mexico; crit.).

### CHLORONERPES RUBIGINOSUS YUCATANENSIS (Cabot).

#### YUCATAN WOODPECKER.

*Adult male*.—Pileum bright crimson laterally and (more or less) anteriorly, this confluent posteriorly with a crimson area covering whole of nape, the red enclosing a large central area of slate-gray covering greater part of forehead, crown, and occiput; back and scapulars plain yellowish olive-green to nearly orange-olive or deep yellowish olive tinged with orange; wings plain orange-brown or yellowish tawny-olive, passing into dull brown or grayish brown on alula, primary coverts, and terminal portion of primaries; rump and upper tail-coverts olive-yellow or citron yellow, broadly barred with light olive; tail light brownish olive, the middle rectrices blackish distally; loreal, orbital, and auricular regions pale buffy brownish or pale broccoli brown, the posterior portion of the last usually indistinctly barred with darker, the post-auricular region dull whitish, distinctly barred with dusky; malar region (broadly) bright crimson; chin and throat dull white or grayish white, streaked and barred (posteriorly) with dusky, the chin sometimes uniform dusky; foreneck and chest dark yellowish olive, narrowly and sharply barred with pale yellow or yellowish white, the remaining under parts similar but the yellow bars much broader and the bars less sharply defined, especially on abdomen, anal region, and flanks; under wing-coverts buffy yellow (maize yellow to buff-yellow), those along edge of wing usually narrowly and indistinctly barred with dusky; inner webs of remiges light yellowish olive, broadly edged (except distally) with pale buffy yellow, their shafts clear light yellow; under surface of lateral rectrices light yellowish olive or dull wax yellow, their shafts clear light yellow; bill dull blackish, sometimes more brownish or horn color on basal portion of mandible; iris dark brown<sup>a</sup>; feet dusky grayish (dark gray in life<sup>a</sup>); length (skins), 180–230 (211); wing, 118.5–132.5 (126.4); tail, 65–79.5 (72.2); culmen, 22.5–27 (25.4); tarsus, 20.5–23.5 (21.6); outer anterior toe, 17.5–20.5 (19.1).<sup>b</sup>

*Young male*.—Similar to the adult male but posterior under parts nearly immaculate light olive-yellowish, the rump and upper tail-

<sup>a</sup> According to Morton E. Peck.

<sup>b</sup> Eighteen specimens.

coverts also nearly immaculate (the darker bars indistinct or obsolete).

*Adult female*.—Similar to the adult male but malar region streaked or spotted with dull white or dusky, like throat; length (skins), 171–225 (205); wing, 116–133.5 (124.7); tail, 62–77.5 (70.5); culmen, 22–27.5 (24.1); tarsus, 20.5–23 (21.3); outer anterior toe, 17.5–19.5 (18.3).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Playa Vicente; Orizaba; Pasa Nueva; Buena Vista), Oaxaca (Chimalapa; Guichicovi; Comáltepec; Tapaná; mountains near Santo Domingo; near Totón-tepec; Teotalcingo), Tabasco (Teapa; Frontera), Yucatan (Tizimín; Izamál; Peto) and Chiapas (Gineta Mountains; Canjób; mountains near Tonalá), and southward through Guatemala (San Gerónimo; Tactic; Cobán; Dueñas; Chiséc; Tolimán; Retalhuleu; Telimán; Barranca Honda; Savana Grande; Volcan de Agua) and Salvadór (La Libertád; Volcan de San Miguél) and Honduras<sup>b</sup> to Nicaragua

<sup>a</sup> Twenty-four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Five adult males from Vera Cruz (3), Oaxaca (1) and Tabasco (1).....	121.6	69.6	24.7	21.5	19.1
Seven adult males from Chiapas (2) and Guatemala (5).....	128	73.6	25.3	21.8	18.8
Two adult males from British Honduras.....	125	69.3	26.3	22.5	19.5
Four adult males from Nicaragua.....	130.1	73.8	26.1	21.4	19.4
Ten adult males ( <i>C. r. uropygialis</i> ) from Costa Rica.....	118.4	66.5	24.5	21.1	18.5
Ten adult males ( <i>C. r. uropygialis</i> ) from Panama.....	119.2	67.1	24.6	21.3	18.4
Six adult males ( <i>C. r. alleni</i> ) from Colombia (Santa Marta district).....	123.4	78.5	26.5	21.6	19.3
One adult male ( <i>C. r. alleni</i> ?) from central Colombia (Bogotá).....	126	79	26.5	23	19
Two adult males ( <i>C. r. meridensis</i> ) from mountains of Venezuela (Merida).....	123	71.8	24.5	21	18
Three adult males ( <i>C. r. rubiginosus</i> ) from coast of Venezuela (San Antonio and El Guadearo).....	110.5	65.5	23.5	20.3	16.8
Seven adult males ( <i>C. r. tobagensis</i> ) from Tobago.....	111	63.8	24.1	20.4	17.6
Five adult males ( <i>C. r. trinitatis</i> ) from Trinidad.....	105.4	60.7	22.9	20	16
FEMALES.					
Six adult females from Vera Cruz (3) and Oaxaca (3).....	121.7	67.7	23.8	21.3	18.2
Ten adult females from Chiapas (2) and Guatemala (8).....	125.1	70.8	21.4	21.4	18.3
Eight adult females from Nicaragua.....	126.4	72.1	24.7	21.3	18.3
Ten adult females ( <i>C. r. uropygialis</i> ) from Costa Rica.....	118.9	66.1	24.1	20.2	17.5
Four adult females ( <i>C. r. uropygialis</i> ) from Panama.....	118.1	67.5	24.1	20.9	18.1
Five adult females ( <i>C. r. alleni</i> ) from Colombia (Santa Marta).....	122.9	79.3	24.5	20.5	19
Two adult females ( <i>C. r. meridensis</i> ) from mountains of Venezuela (Merida).....	122.3	73.5	22.8	20.8	17.8
Three adult females ( <i>C. r. tobagensis</i> ) from Tobago.....	110.3	65.5	22.8	19.5	17
Three adult females ( <i>C. r. trinitatis</i> ) from Trinidad.....	100	57.3	21.8	18.8	15.8
One adult female ( <i>C. r. canipileus</i> ) from Bolivia.....	127	74	24.5	22.5	18

<sup>b</sup> No Honduras specimen seen by me.



(León; Matagalpa; Chinandega; San Gerónimo, Chinandega; Volcan de Chinandega; Rio Grande; Rio Coco; San Carlos; San Rafael del Norte).

*Picus yucatanensis* CABOT, Proc. Bost. Soc. N. H., i, May, 1844, 164 (Yucatan; coll. Dr. S. Cabot, jr.); Journ. Bost. Soc. N. H., v, pt. i, 1845, 92 (road from Chemax to Yalahao, Yucatan).

*Chloronerpes yucatanensis* SCLATER, Proc. Zool. Soc. Lond., 1859, 60 (Honduras; crit.); Cat. Am. Birds, 1862, 339 (Coban, Guatemala).—SCLATER and SALVIN, Ibis, 1859, 136 (Dueñas, Guatemala; Yucatan).—MOORE, Proc. Zool. Soc. Lond., 1859, 60 (Honduras; crit.).—SALVIN and SCLATER, Ibis, 1860, 144 (Coban; crit.).—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 104, part (Mexico).—SALVIN, Cat. Strickland Coll., 1882, 396 (Guatemala).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 452 (Tizimin, Yucatan).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 84, part (Teapa, Tabasco; Peto, Yucatan; Orange Walk and Southern Pine Ridge, Brit. Honduras; Dueñas, Coban, Chisec, Tactic, Barranca Honda, Savana Grande, and Volcan de Agua, Guatemala).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 518 (San Carlos, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 407, part (Playa Vicente, Vera Cruz; Teapa, Tabasco; Chimalapa, Tapaná, and Guichicovi, Oaxaca; Gineta Mts., Chiapas; Tizimin, Izamal, and Peto, Yucatan; Orange Walk, British Honduras; San Gerónimo, Toliman, Retalhuleu, etc., Guatemala; La Libertad and Volcan de San Miguel, Salvador; León, Chinandega, Matagalpa, San Rafael del Norte, etc., Nicaragua).

*C[hlronerpes] yucatanensis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 161, part (Mexico).

[*Chloronerpes*] *yucatanensis* GRAY, Hand-list, i, 1869, 198, no. 8777, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100, part.—SHARPE, Hand-list, ii, 1900, 205, part.

*Picus yucatanensis* SUNDEVALL, Consp. Av. Picin., 1866, 70, part (Mexico).—GIEBEL, Thes. Orn., iii, 1876, 186.

*P[icus] yucatacensis* GRAY, Gen. Birds, iii, 1849, App., p. 21.

[*Chloronerpes*] *canipileus* GRAY, Hand-list, ii, 1870, 198, no. 8776, part.

*Chrysopicus rubiginosus* (not *Picus rubiginosus* Swainson) MALHERBE, Mon. Pict., ii, 1862, 174, part.

(?) *Chloronerpes xeruginosus* (not of Malherbe?) SCLATER, Proc. Zool. Soc. Lond., 1859, 388 (Teotalcingo, Oaxaca).

*Chloronerpes xeruginosus* (not of Malherbe) LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 35 (Tapaná and Guichicovi, Oaxaca; Gineta Mts., Chiapas).—BOUCARD, Liste Ois. récol. Guat., 1878, 27 (Guatemala).

### CHLORONERPES RUBIGINOSUS UROPYGIALIS (Cabanis).

#### COSTA RICAN WOODPECKER.

Similar to *C. r. yucatanensis*, but more richly colored; the foreneck and chest washed with golden brown and with yellow bars averaging narrower, color of upper parts averaging more golden brownish (less greenish), and rump frequently less distinctly barred (often uniform or nearly so);<sup>a</sup> wing, tail, and bill averaging shorter.

<sup>a</sup> Occasional specimens, both from Panama and Costa Rica, have the rump quite as plain colored as *C. r. rubiginosus*. One adult male from Sarchí, Costa Rica (no. 101920) has the crimson malar patches united posteriorly by a broad band across the lower throat, the foreneck washed with crimson, and touches of the same color over whole back, scapulars, rump, and upper tail-coverts.

*Adult male*.—Length (skins), 187–213 (200); wing, 114–123 (118.8); tail, 64–71.5 (66.8); culmen, 22.5–27 (24.6); tarsus, 20–22.5 (21.2); outer anterior toe, 17.5–20 (18.4).<sup>a</sup>

*Adult female*.—Length (skins), 187–211 (198); wing, 115.5–122.5 (118.7); tail, 64–71 (66.5); culmen, 22–26 (24.1); tarsus, 19.5–21 (20.4); outer anterior toe, 17–18.5 (17.7).<sup>b</sup>

Costa Rica (Cerro de la Candelária; Cerro Santa Maria; Sarchí de Alajuela; Cariblanco de Sarapiquí; Naranjo and Azahár de Cartago; Guayabo; Bonilla; Juan Viñas; Turrialba; Carrillo; La Hondura; Barranca; Laguária; Santa Maria de Dota; Atirro; Rio Súcio) and western Panamá (Boquete, 4,000–5,600 feet; Boquerón; Cordillera del Chucu; Volcán de Chiriquí).

*Chloronerpes uropygialis* CABANIS, Journ. für Orn., x, Sept., 1862, 321, 322 (Cerro de la Candelaria, Costa Rica; coll. Berlin Mus.).

*Chloronerpes yucatanensis uropygialis* (not of Bangs, 1899) <sup>c</sup> BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 33 (Boquete, Panamá, 4,000–5,600 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 584 (Costa Rica; habits).

*Chloronerpes yucatanensis* (not *Picus yucatanensis* Cabot) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 131 (Turrialba and Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 364 (Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 124 (Rio Súcio, Sarchí de Alajuela, and Naranjo de Cartago, Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., Orn. Ser., i, 1910, 267 (Guayabo, Costa Rica).

*C[hlaronerpes] yucatanensis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 161, part.

*[Chloronerpes] yucatanensis* GRAY, Hand-list, ii, 1870, 198, no. 8777, part.—SHARPE, Hand-list, ii, 1900, 205, part.

*Picus yucatanensis* SUNDEVALL, Consp. Picin., 1866, 70, part (Costa Rica).

*Chloronerpes canipileus* (not *Picus canipileus* D'Orbigny) SALVIN, Proc. Zool. Soc. Lond., 1870, 212 (Cordillera del Chucu and Volcan de Chiriquí, Panamá; crit.).

*[Chloronerpes] canipileus* GRAY, Hand-list, ii, 1870, 198, no. 8776, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100, part.

### CHLORONERPES CHRYSOCHLORUS AUROSUS Nelson.

#### GOLDMAN'S WOODPECKER.

Similar to *C. c. chrysochlorus*, of southern Brazil and Paraguay, but auricular region paler olive and distal portion of primaries more extensively dusky.<sup>d</sup>

*Adult male*.—Pileum and hindneck bright deep poppy red or clear carmine red, the feathers grayish beneath surface; rest of upper parts

<sup>a</sup> Twenty specimens.

<sup>b</sup> Fourteen specimens.

For comparative measurements of Panamá and Costa Rican specimens see p. 132.

<sup>c</sup> = *Chloronerpes yucatanensis alleni* Bangs, Proc. New Engl. Zool. Club, iii, March 31, 1902, 83 (San Sebastian, Sierra Nevada de Santa Marta, Colombia, 6,600 ft.; coll. E. A. and O. Bangs).

<sup>d</sup> I doubt, however, whether these characters would prove constant in a larger series of the supposed two forms.

plain deep citrine or between this and medal bronze,<sup>a</sup> duller on outer webs of primaries, the rectrices dusky terminally and medially (next to shafts); loreal, suborbital, and auricular regions deep citrine or light brownish olive (Saccardo's olive); a rictal stripe (originating on lower edge of frontal antiæ) of dull orange-yellow (antimony yellow), passing into buff-yellow or pinard yellow posteriorly (on subauricular portion); a broad malar patch of carmine red, succeeded by a broad stripe of uniform brownish olive or olive-brown on sides of neck (beneath the yellow subauricular stripe); chin and throat immaculate light cinnamon-buff; rest of under parts light cinnamon-buff or dull light orange-yellow (deepest on chest, much paler on under tail-coverts) everywhere regularly and rather narrowly barred with dusky olive-brown; axillars and under wing-coverts immaculate pinkish cinnamon or light vinaceous-cinnamon; under surface of remiges light cinnamon-rufous, with distal portion abruptly dusky; bill dark horn color, with terminal portion of maxilla darker and basal portion of mandible slightly paler; legs and feet dusky horn color (in dried skins); length (skins), 204.5; wing, 124.5; tail, 67; exposed culmen, 23; tarsus, 20.5; outer anterior toe, 19.<sup>b</sup>

Eastern Panama (Marraganti).

*Chloronerpes chrysochlorus aurosus* NELSON, Smithsonian, Misc. Coll., vol. 60, no. 3 (pub. 2143), Sept. 27, 1912, 3 (Marraganti, 150 miles east of Canal Zone, eastern Panama; coll. U. S. Nat. Mus.).

### CHLORONERPES CALLOPTERUS Lawrence.

#### PANAMÁ WOODPECKER.

*Adult male*.—Pileum and hindneck carmine red, more or less broken on forehead and crown by slate-grayish, only the tips of these feathers being red; back, scapulars, wing-coverts, and secondaries plain bright orange-brown (nearest raw-umber but more orange-yellowish or greenish), the outer webs of secondaries with inner portion (next to shaft and concealed, except terminally, in closed wing) light cinnamon-rufous, rather distantly barred or spotted (except sometimes on proximal feathers) with black; primaries clear cinnamon-rufous rather distantly spotted with blackish, their distal portion uniform brownish dusky or sepia brown; under wing-coverts deep pinkish buff, or cinnamon-buff; inner webs of remiges light cinnamon-rufous with distal portion, abruptly, dusky (extensively on longer primaries), the distal portion of cinnamonous area on secondaries showing a greater or less number of bars or transverse spots of dusky next to shaft; primary coverts olive-brown, the innermost ones spotted with light cinnamon-rufous; rump and upper tail-coverts light olive or yellowish olive, the former transversely spotted or broadly barred

<sup>a</sup> Of the author's "Color Standards," pl. iv, colors 211 and 19m.

<sup>b</sup> One specimen (the type).



laterally with pale buffy yellowish, the latter with more or less distinct (sometimes large) mesial streaks or central spots of pale yellowish or buffy; tail olive passing into dusky terminally, the two outer developed rectrices on each side sometimes with a median streak of pale cinnamon-rufous, the under surface of lateral rectrices dull light olive-grayish; a broad subloral and suborbital stripe of dull olive-whitish, originating immediately behind nostril, on lower-anterior portion of loreal region, this stripe passing into into grayish olive on auricular region; a broad malar stripe, chin and throat dull yellowish, or brownish, white, irregularly streaked, spotted, or flecked with olive; chest and lower foreneck olive, broken by guttate streaks (anteriorly) and spots (posteriorly) of pale dull buffy yellowish; rest of under parts pale dull yellowish (nearly straw yellow) barred with dusky olive, the under tail-coverts sometimes more buffy and partly immaculate; bill, in dried skins, dusky horn color, paler (sometimes dull whitish) on basal half of mandible; feet dull grayish brown (in dried skins); length (skins), 167–175 (171); wing, 106–108.5 (107); tail, 56.5–59 (58); culmen, 21; tarsus, 17–18 (17.3); outer anterior toe, 15–16.5 (15.7).<sup>a</sup>

*Adult female*.—Similar to the adult male, but pileum dull slaty olive, only the lower occiput and hindneck being red; the malar region similar but rather lighter grayish olive; length (skins), 165–169.5 (167); wing, 106–108.5 (107.5); tail, 55.5–58 (56.7); exposed culmen, 20–21.5 (20.7); tarsus, 17–18.5 (17.7); outer anterior toe, 15–16 (15.5).<sup>b</sup>

Panamá (Lion Hill; Verágua; Cana; Cerro Brujo).

*Chloronerpes callopterus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 476 (Lion Hill, Panama; coll. G. N. Lawrence).—GRAY, List Birds Brit. Mus., Capit. and Pucid., 1868, 106.—SALVIN, Ibis, 1874, 317 (Veragua; crit.).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 80 (Veragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 409, pl. 59, fig. 1 (Veragua; Lion Hill). [*Chloronerpes*] *callopterus* GRAY, Hand-list, ii, 1870, 199, no. 8785.—SHARPE, Hand-list, ii, 1900, 205.

[*Araucanus*] *callopterus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 159.

*Chrysopicus callopterus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 326.

*Picus callopterus* SUNDEVALL, Consp. Av. Picin., 1866, 12.

### CHLORONERPES SIMPLEX SIMPLEX Salvin.

#### BUGABA WOODPECKER.

Similar to *C. callopterus* but with suborbital and subauricular regions, chin, and throat light brown, concolor, or nearly so, with adjacent parts of head.

*Adult male*.—Pileum (including superciliary region), hindneck, malar region, and more or less of suborbital region, bright, rather dark, poppy red, the feathers dusky grayish or dull slate color beneath surface; upper parts mostly plain yellowish olive-green, or

<sup>a</sup> Three specimens from Panama.

<sup>b</sup> Three specimens.

between olive-green and raw umber, the outer webs of distal primaries more or less distinctly spotted with dull cinnamon-rufous, the inner webs of proximal secondaries (except first two) showing more or less of the same along margin, the upper tail-coverts sometimes tipped or terminally margined with wax yellowish; tail dull black terminally, passing into dull olive-greenish basally; auricular region, chin, and throat plain olive or brown (between broccoli brown and raw-umber); foreneck and chest greenish olive to ochreous olive, the latter more or less conspicuously spotted with pale buffy yellowish, the breast similar but with the yellowish spots more transverse (bar-like); rest of under parts rather broadly barred with deep or dark olive on a yellowish buff or pale buff-yellowish ground, the darker bars narrower, and yellowish interspaces correspondingly wider, on under tail-coverts; under wing-coverts vinaceous-cinnamon or light cinnamon-rufous, the carpo-metacarpal region more or less spotted or barred with dusky; inner webs of remiges light cinnamon-rufous, tipped with dusky (extensively so on outermost and longer primaries), with transverse spots or broad bars of dusky on inner half (approximately), these concealed in the closed wing; under surface of tail light glaucous-olive; bill dull black, the mandible with basal half or more pale horn color or whitish; legs and feet dusky (olive-green in life); length (skins), 172-182 (177); wing, 108-118.5 (113); tail, 58.5-66.5 (61.9); culmen, 19-21.5 (20); tarsus, 17-19 (17.7); outer anterior toe, 15-16.5 (15.8).<sup>a</sup>

*Adult female*.—Similar to the adult male, but only the nape and hindneck bright red, the pileum dull olive, and malar region lighter, more yellowish, olive; loreal, superciliary, and suborbital region tinged with dark red; length (skins), 170-185 (178); wing, 112-116 (113); tail, 57.5-65.5 (62.4); culmen, 19.5-21.5 (20.7); tarsus, 17-18.5 (17.8); outer anterior toe, 15-16.5 (15.8).<sup>b</sup>

*Young female*.—Similar to the adult female, but general color of under parts more buffy, the chest broadly barred with buff, and foreneck spotted with the same.

Western Panamá (Bugaba, Chiriquí), through Costa Rica (Talamanca; Rio Sicsola; Guayabo; Carrillo; El Hogár; Cachí; Bonilla;

<sup>a</sup> Nine specimens.

<sup>b</sup> Five specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Seven adult males from Costa Rica.....	112.3	61.8	20.1	17.6	15.9
Two adult males from Nicaragua.....	115.5	62.5	19.8	17.8	15.5
One adult male (type of <i>C. s. allophyeus</i> ) from Honduras.....	112	61.5	18	17	15.5
FEMALES.					
Five adult females from Costa Rica.....	113	62.4	20.7	17.8	15.8

El Pozo de Térraba; Pozo Azul de Pirris; La Vijagua) to Nicaragua (Peña Blanca; Rio Grande; La Libertad, Chontales).

*Chloronerpes simplex* SALVIN, Proc. Zool. Soc. Lond., Aug. 1, 1870, 212 (Bugaba, Chiriqui, w. Panama; coll. Salvin and Godman;=adult female); Ibis, 1874, 315, 317 (Chiriqui; Talamanca, Costa Rica; descr. adult male).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nat. C. R., i, 1887, 124 (Costa Rica).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 81 (Bugaba, Panama; Veragua).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 536 (Pozo Azul de Pirris, s. w. Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 410, pl. 59, fig. 2 (La Libertad, Chontales, Nicaragua; etc.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, 1910, 267 (Guayabo, Costa Rica).

[*Chloronerpes*] *simplex* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99.—SHARPE, Hand-list, ii, 1900, 205.

*C[hlórónerpēs] simplex simplex* BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 145, in text.

*Chloronerpes simplex simplex* CARRIKER, Ann. Carnegie Mus., vi, 1910, 584 (Costa Rica; habits).

### CHLORONERPES SIMPLEX ALLOPHYEUS Bangs.

#### YARUCA WOODPECKER.

Similar to *C. s. simplex*, of Costa Rica, Nicaragua, and western Panama, but bill slightly smaller, chest broadly barred with pale yellowish buff, general color of under parts of body pale buff-yellow or dull maize yellow, and outer web of two lateral rectrices (on each side) spotted with pale cinnamon-rufous.

*Adult male*.—Length (skin), 167; wing, 112; tail, 61.5; culmen, 18; tarsus, 17; outer anterior toe, 15.5.<sup>a</sup>

Northern Honduras (Yaruca, 1,000 feet altitude).

*Chloronerpes simplex allophyeus* BANGS, Bull. Mus. Comp. Zool., xxxix, July, 1903, 145 (Yaruca, Honduras, 1,000 ft.; coll. E. A. and O. Bangs).

### Genus CELEUS Boie.

*Celeus* BOIE, Isis, 1831, 542. (Type, as fixed by Gray, 1841, *Picus flavescens* Gmelin.)

*Celeopicos* MALHERBE, Mém. Acad. Metz, xxx, 1849, 332. (Type, *Picus flavescens* Gmelin.)

*Xanthopicus* MALHERBE, Mon. Pictid., Introd., 1861, p. liii. (Type, *Picus flavescens* Gmelin.)

*Malacolophus* SWAINSON, Fauna Bor.-Am., ii, 1831, 300. (Type, according to Gray, 1855, *Picus flavescens* Gmelin.)

*Malacolaphus* (emendation?) SWAINSON, Anim. in Menag., 1838, 229, in text.

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<sup>a</sup> One specimen (the type).

I am somewhat doubtful whether this supposed form will prove really separable when a larger series of specimens has been examined. Examination of additional specimens of true *C. simplex* from Nicaragua requires the elimination of some of the characters given in the original description; for example, as to measurements, while Mr. Bangs says it is "considerably smaller," all the measurements, except culmen (which really is less) and tarsus (which is exactly the same) are in reality decidedly greater than the minimum of the same measurements of a series of nine adult males of *C. s. simplex*.



Medium-sized to rather large Picidæ (wing about 109–170 mm.) with nostrils wholly exposed; no antrorse bristly feathers near nostril, on malar apex, nor on chin; bill rather stout with chisel-shaped tip and distinct supranasal ridge, and with upper parts mostly chestnut or cinnamon-rufous (with or without black bars), or barred with black and buff-yellow or brown and yellowish; usually conspicuously crested, the pileum always without red;<sup>a</sup> adult males with a broad malar patch of red.

Bill <sup>b</sup> shorter than head, stout, broad and rather depressed at base (width at anterior end of nostrils decidedly greater than its depth at same point), its tip distinctly though narrowly chisel-shaped; culmen distinctly ridged, faintly to rather strongly convex (nearly straight in *C. loricatus*); gonys slightly to decidedly longer than mandibular rami, obviously (usually distinctly) ridged, straight or faintly concave terminally, more or less convex and prominent basally; supranasal ridge very distinct, much nearer to culmen than to tomium, extending for at least basal half of maxilla. Nostril wholly exposed, small, roundish or oval, sometimes nearer to culmen than to tomium, sometimes the reverse. Prefrontal feathers short, erect, without bristle-like tips, the feathers of malar apex and chin also short and without bristly tips. Orbital region naked, including margin or edge of eyelids, except posterior portion of lower lid. Wing moderate, rounded; longest primaries exceeding secondaries by one-seventh to one-fourth (*C. loricatus*) the length of wing; fifth and sixth, sixth, or sixth and seventh primaries longest, the ninth sometimes shorter than first (*C. flavescens*, *C. lugubris*?<sup>c</sup>), intermediate between first and second (*C. castaneus*), or intermediate between second and third (*C. loricatus*), the tenth (outermost) slightly less than half (*C. castaneus*, *C. loricatus*) as long as ninth to decidedly more than half as long (*C. flavescens*, *C. lugubris*?<sup>c</sup>). Tail about three-fifths as long as wing to nearly half as long, the middle rectrices gradually narrowing terminally and (except in *C. castaneus* and *C. loricatus*) with shafts somewhat expanded subterminally. Tarsus nearly as long as outer hind toe with claw (*C. castaneus*, *C. loricatus*,

<sup>a</sup> Sometimes, in adult males, there are touches of red on the forehead or superciliary region, but there is never a definite area of this color, and the crest is invariably buff-yellow, olive-buff, cinnamon-rufous, or some analogous color.

<sup>b</sup> *C. rufus* (Gmelin) is excluded from the species upon which this generic description is based, as I am by no means satisfied that it belongs here. The single specimen examined has the bill very different from that of any species of *Celeus* proper, being relatively smaller and more pointed (not at all wedge-shaped at tip), the culmen rounded (instead of distinctly ridged) and distinctly convex or arched in middle portion, the nasal fossæ relatively much larger and less feathered, and the nostril apparently different.

<sup>c</sup> In the specimen examined of *C. lugubris* the ninth primary is not fully grown. The specimen of *C. jumana* examined in this connection also has the primaries imperfect.

*C. lugubris*, *C. jumana*) to decidedly longer (*C. flavescens*); outer hind toe decidedly shorter than outer front toe; tarsi and toes very stout (less so in *C. loricatus*), the claws very large and strongly curved.

*Coloration*.—General color of upper parts cinnamon-rufous or chestnut (with or without black bars), brown barred with yellowish or buffy, or black barred with buff-yellow; under parts plain brown, cinnamon-rufous, ochraceous, or tawny with black spots, bars or lunules, chestnut with buff flank-patch, or plain black; crest plain buff-yellow, ochraceous, olive-buff, or chestnut; adult male with a broad malar patch of bright red but without any red area on pileum. Texture of plumage peculiar, the feathers of head distinctly outlined (not blended), those of sides and flanks (beneath wings) soft and downy.

*Range*.—Southeastern Mexico to southeastern Brazil, Paraguay, Bolivia, and Peru. (About fifteen species, mostly South American.)

#### KEY TO THE SPECIES OF CELEUS.

- a. Head conspicuously crested; tail and outer webs of remiges not barred; rump immaculate.
  - b. Under parts, back, and wing-coverts immaculate; middle rectrices wholly black (except basal portion of shaft).
    - c. Inner webs of remiges broadly barred with dusky. (Venezuela, Trinidad, and northern Brazil.) ..... ***Celeus elegans*** (extralimital).<sup>a</sup>
    - cc. Inner webs of remiges immaculate yellow. (Panama.)
      - Celeus immaculatus*** (p. 141).
  - bb. Under parts, back, and wing-coverts barred or transversely spotted with black; middle rectrices with basal half or more chestnut. (Southern Mexico to Costa Rica.) ..... ***Celeus castaneus*** (p. 141).
- aa. Head not crested; tail and outer webs of remiges barred; rump barred with black. (*Celeus loricatus*.)
  - b. Under parts of body light dull vinaceous-cinnamon, conspicuously paler than color of throat or foreneck; upper parts with black markings smaller and less numerous, sometimes nearly absent; smaller (male with wing averaging 119, tail 64.8, culmen 21.8, tarsus 20, female with wing averaging 120.2, tail 65.7, culmen 21.5, tarsus 19.5.) (Eastern Panama to northwestern Peru.)
    - Celeus loricatus loricatus*** (p. 143).
  - bb. Under parts of body deep cinnamon, nearly concolor with color of foreneck or (in female) throat; upper parts with black markings larger, more numerous; larger (male with wing averaging 123.9, tail 68.4, culmen 21.5, tarsus 20.5; female with wing averaging 124.2, tail 68.2, culmen 23.1, tarsus 20.5). (Costa Rica; western Panama?) ..... ***Celeus loricatus diversus*** (p. 145).

<sup>a</sup> *Picus elegans* Müller, Syst. Nat. Suppl., 1776, 92 (Cayenne; based on Pl. Enl., pl. 524).—*Celeus elegans* Gray, List Birds Brit. Mus., Capit. and Picid., 1868, 87; Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 426.—*Picus fusco-fulvus* Boddaert, Tabl. Pl. Enl., 1783, 30 (Cayenne; based on Pl. Enl., pl. 524).—[*Picus*] *cinnamomeus* Gmelin, Syst. Nat., i, pt. i, 1788, 428 (Cayenne; based on Pl. Enl., pl. 524; etc.).—*Celeus cinnamomeus* Boie, Isis, 1831, 542.—*Celeopicus cinnamomeus* Malherbe, Mon. Picid., ii, 1862, 32, pl. 56, figs. 1, 2. The Trinidad bird has, however, been separated as *Celeus elegans leotaudi* by Hellmayr, Novit. Zool., xiii, Feb., 1906, 39, 40 (Valencia, Trinidad; coll. Tring Mus.).

## CELEUS IMMACULATUS Berlepsch.

## IMMACULATE WOODPECKER.

Similar to *C. elegans* (Müller),<sup>a</sup> but inner webs of remiges without dusky bars (plain yellow).

Panamá (Agua Dulce)?

*Celeus immaculatus* BERLEPSCH, Ibis, 4th ser., iv, no. 1, Jan., 1880, 113 (Agua Dulce, Panama?; coll. Count von Berlepsch).—REICHENOW and SCHALOW, Journ. für Orn., 1880, 314 (reprint of orig. descr.).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 426.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 443.

[*Celeus*] *immaculatus* SHARPE, Hand-list, ii, 1900, 226.

## CELEUS CASTANEUS (Wagler).

## CHESTNUT-COLORED WOODPECKER.

*Adult male*.—Malar and suborbital regions, together with part of loreal and postocular regions, dull carmine or dark poppy red; rest of head, together with upper neck, all round, plain dull ochraceous or clay color to tawny, the pileum, especially the elongated occipital crest, sometimes noticeably paler; body and wings chestnut or rufous-chestnut, the feathers of rump paler, often light yellow (straw yellow to maize yellow), beneath surface, the back, scapulars, lesser and middle (sometimes also greater and primary) wing-coverts rather sparsely barred or transversely spotted with dull black, the under parts with broader cordate, U-shaped or V-shaped bars or spots of the same; terminal portion (extensively) of primaries plain dusky; tail chestnut basally, dull black or dusky terminally; axillars, under wing-coverts, and outer portion of sides and flanks plain sulphur yellow or straw yellow to pale yellowish buff or cream color; inner webs of remiges plain dull cinnamon-rufous or vinaceous-cinnamon, the terminal portion (extensively on outer primaries) abruptly plain dusky; bill pale yellowish, sometimes light grayish horn color basally; iris brown; legs and feet horn color or olive (in dried skins); length (skins), 200–237 (212.5); wing, 121.5–134.5 (129.1); tail, 73.5–90 (82.4); culmen, 23.5–27 (25.4); tarsus, 21–24 (22.7); middle toe, 20–22 (21.2).<sup>b</sup>

<sup>a</sup> See p. 140. For the more satisfactory identification of this form, which I have not seen, the following description of *C. elegans* is given:

*Adult male*.—General color plain deep cinnamon-rufous, the pileum (including occipital crest) decidedly paler; rump, upper tail-coverts, flanks, and under wing-coverts, immaculate dull naples yellow (the first two tinged with olive-yellow); inner webs of remiges pale buff basally passing into pale cinnamon-rufous terminally, broadly barred or spotted with dusky; tail dull black, with shafts of rectrices pale dull yellow basally, the rudimentary lateral rectrices plain cinnamon-rufous with yellow shaft; malar region bright red; bill dull brownish white (in dried skin); length (skin), 204 mm.; wing, 128; tail, 80; culmen, 27; tarsus, 24; outer anterior toe, 22.

(No. 109769, coll. U. S. Nat. Mus.; Orinoco district, Venezuela; trade skin.)

<sup>b</sup> Thirty-one specimens.



*Adult female*.—Similar to the adult male, but without any red on the head; length (skins), 200–248 (220.5); wing, 121.5–132.5 (126.7); tail, 72–87 (80.5); culmen, 23–26.5 (24.6); tarsus, 21.5–23.5 (22.5); middle toe, 19–22.5 (20.8).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Santecomapám; Atoyác; Cuesalapa; Omealca; Uvero; Motzorongo; Orizaba; Minatitlán; Pasa Nueva; Buena Vista; Tolosa; Playa Vicente), Oaxaca (Túxtepec; Chimalapa; mountains near Santo Domingo), Tabasco (Teapa), and Yucatan (Tizimín), and southward through Guatemala (Choctúm; Telemán; Gualán; Chapulco; Los Amates, Ysabál), Salvadór (La Libertád), British Honduras (Orange Walk; Toledo District; near Manatee Lagoon), Honduras (Chaloma; Chamelicón; Santa Ana; San Pedro; San Pedro Sula; San Pedro Montaña; Omoa; Potrerillos; Julián), Nicaragua (Greytown; Rio San Juan; Rio Grande; Chontales; Lavala and Uluce, Matagalpa; Quilili; Peña Blanca), to Costa Rica (Sipúrio, Talamanca; Rio Sicsola; Limón; Pacuare; Turrialba; Guayabo; Angostura; Guácimo; La Vijagua).

*P[icus] castaneus* WAGLER, Isis, 1829, 515 (ex Lichtenstein, manuscript; coll. Berlin Mus.; no locality mentioned, but cites "*Pic roux rayé de Cayenne* Hol-  
lânde Abregé d'hist. nat. 3, p. 404b").

*Picus castaneus* SUNDEVALL, Consp. Av. Picin., 1866, 86 (Mexico to Surinam).

<sup>a</sup> Thirty-nine specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Seven adult males from Vera Cruz, Mexico.....	127. 2	83. 3	24. 9	22. 2	20. 9
One adult male from Guatemala.....	133	84	25. 5	.....	.....
Four adult males from British Honduras.....	129. 8	83. 2	24. 5	23. 1	21. 8
Nine adult males from Honduras (3) and Nicaragua (6).....	128. 1	80. 3	25. 3	22. 9	21. 4
Ten adult males from Costa Rica.....	129. 6	83. 8	25. 1	22. 6	21. 1
FEMALES.					
Seven adult females from Vera Cruz.....	125. 4	79	24. 3	22. 4	20. 9
Five adult females from Oaxaca.....	126. 3	80	24. 6	22. 9	21. 2
Three adult females from British Honduras.....	125. 3	81. 5	24. 5	22. 2	21. 5
Seven adult females from Guatemala.....	126. 5	82. 8	24. 9	22. 2	20. 8
Nine adult females from Honduras (3) and Nicaragua.....	126. 6	78. 3	24. 7	22. 4	20. 5
Eight adult females from Costa Rica.....	128. 9	82	24. 6	22. 8	20. 8

Specimens examined from Mexico and Guatemala have, as a rule, the color of the head and crest appreciably darker than those from Honduras, Nicaragua, and Costa Rica, but examples from British Honduras are variable in this respect, some agreeing with the more northern, others with the more southern, specimens. On the whole, the difference does not seem to be sufficiently marked or constant to justify the recognition of two forms, and probably is, to a certain extent at least, seasonal.

[*Celeus*] *castaneus* LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 77.—GRAY, Hand-list, ii, 1870, 194, no. 8716.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101.—SHARPE, Hand-list, ii, 1900, 227.

*Celeus castaneus* SCLATER, Proc. Zool. Soc. Lond., 1858, 359 (Potrerillos, Honduras); 1859, 60, 388 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 336 (Honduras; "Central America").—MOORE, Proc. Zool. Soc. Lond., 1859, 60 (Omoa, Honduras; habits).—SCLATER and SALVIN, Ibis, 1859, 137 (Atlantic slope Honduras); Proc. Zool. Soc. Lond., 1870, 837 (Julian and San Pedro, Honduras).—TAYLOR, Ibis, 1860, 119 (Potrerillos, Honduras).—GRAY, List Birds Brit. Mus., Capit. and Pictæ, 1868, 88.—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 183 (Greytown, Nicaragua); ix, 1868, 130 (Turrialba and Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 364 (Costa Rica).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 560 (tierra caliente Vera Cruz); La Naturaleza, v, 1882, 240 (Omealca and Uvero, Vera Cruz).—SALVIN, Ibis, 1872, 320 (Chontales, Nicaragua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Proc. U. S. Nat. Mus., viii, 1885, 111; Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Turrialba and Pacuare, Costa Rica).—BOUCARD, Liste Ois. récol. Guat., 1878, 27; Proc. Zool. Soc. Lond., 1883, 452 (Tizimin, Yucatan; habits).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 433 (Atoyac and Orizaba, Vera Cruz; Tizimin, Yucatan; Orange Walk, Brit. Honduras; Teleman and Choctum, Guatemala; etc.).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 518 (Greytown, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 441 (Chimalapa, Oaxaca; La Libertad, Salvador; etc.).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Chaloma, Honduras).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 91 (Los Amates, Guatemala; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 591 (Costa Rica; habits).

*M[eiglyptes] castaneus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 405, pl. 659, fig. 4372 (adult female).

*Celeopicus castaneus* MALHERBE, Mon. Picid., ii, 1862, 25; iii, 1862, pl. 50, figs. 1, 2.

*Picus badioides* LESSON, Cent. Zool., livr. ii, Sept., 1830, 56, pl. 14 (Mexico =female).

[*Celeus*] *badioides* BOIE, Isis, 1831, 542.—GRAY, Gen. Birds, ii, 1846, 440.

[*Celeus*] *badioides* BONAPARTE, Consp. Av., i, 1850, 130; Ateneo Italiano, ii, 1854, 123) Consp. Volucr. Zygod., 1854, 8).

*Celeus badioides* SCLATER, Proc. Zool. Soc. Lond., 1857, 229 (Cuesalapa and Sante-comapam, Vera Cruz).

*Celeopicus badioides* MALHERBE, Mém. Acad. Metz, xxx, 1849, 334.

## CELEUS LORICATUS LORICATUS (Reichenbach).

### FRASER'S WOODPECKER.

*Adult male*.—Above deep cinnamon-rufous, or rufous-chestnut, the feathers of forehead, or (usually) forehead and crown, black or dusky centrally (forming a broadly streaked or squamate effect), the back (upper part, at least), scapulars, and wings with a greater or less number of more or less distinct narrow black bars; rump and upper tail-coverts paler (light cinnamon to cinnamon-buff), more or less heavily marked with cordate spots or V-shaped broad bars of black, the upper tail-coverts sometimes immaculate superficially; tail broadly and sharply barred with cinnamon-rufous or cinnamon-buff and black, the elon-

gated terminal portion of middle rectrices uniform black; terminal portion of longer primaries mostly uniform blackish; under surface of wings light cinnamon-rufous, the distal portion of remiges broadly barred with dusky, the proximal portion also similarly barred, but the dusky bars shorter and narrower, quite concealed in the closed wing; loreal, suborbital, and auricular regions plain cinnamon-rufous; malar region, chin, and upper and middle portions of throat bright red (deep poppy red to nearly crimson), the throat usually more or less spotted, transversely, with black, the feathers grayish basally; lower throat and upper chest light cinnamon-rufous, the throat sometimes immaculate, but sometimes spotted with black, like chest; rest of under parts still paler and more buffy (pale cinnamon to pale cinnamon-buff), the lower chest and breast heavily marked with broad U- or V-shaped markings of black, the remaining portions similarly but less heavily marked, the markings more lunulate or transverse, smaller (sometimes nearly wanting) on middle of abdomen; bill light horn color to dull whitish in dried skins, in life the maxilla horn color, the mandible dull greenish or olivaceous white; iris reddish brown to carmine; feet horn color to bluish; length (skins), 184-199 (193); wing, 116-120 (119); tail, 61-67.5 (64.8); culmen, 21-22.5 (21.8); tarsus, 19.5-20.5 (20); middle toe, 18.5-19.5 (18.9).<sup>a</sup>

*Adult female*.—Similar to the adult male, but red of malar region, chin, and throat replaced by uniform light cinnamon-rufous; length (skins), 194-197 (195); wing, 118-123 (120.2); tail, 64-69 (65.7); culmen, 20-22.5 (21.5); tarsus, 19-20 (19.5); middle toe, 18-19 (18.5).<sup>b</sup>

<sup>a</sup> Five specimens.		<sup>b</sup> Four specimens.			
Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
One adult male from Colombia (Rio Atrato: Type of <i>Celeus mentalis</i> Cassin).....	116	61	22.5	20.5	18.5
Three adult males from eastern Panama.....	119.7	65.7	21.6	19.9	19
Five adult males from Costa Rica ( <i>C. l. diversus</i> ).....	123.9	68.4	21.5	20.5	19.5
FEMALES.					
One adult female from Colombia (Turbo).....	121.5	.....	20	19.5	18
Three adult females from eastern Panama.....	119.8	65.7	22.2	19.5	18.7
Four adult females from Costa Rica.....	124.2	68.2	23.2	20.5	19.2

Although I have not seen specimens of this species from either Ecuador or Peru, I very much doubt whether they are subspecifically the same, for the reason that the Costa Rican specimens are clearly different from those of Panama and northern Colombia. It will doubtless prove necessary to distinguish the form from Colombia and Panama as *Celeus loricatus mentalis* (Cassin).



Panamá (Verágua?; Laguna del Pita; Loma del León; Marraganti; Cana), and Colombia (Rio Atrato; Turbo; Remédios and Nechi, Antioquia) to western Ecuadór (Babahoyo) and northwestern Peru.

*M[eghlyptes] loricatus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 405, pl. 681, figs. 4495, 4496 (n. Peru).

*Picus loricatus* SUNDEVALL, Consp. Av. Picin., 1866, 87 (Babahoyo, w. Ecuador; Central America).

*Celeus loricatus* GRAY, List Birds Brit. Mus., Pictidæ, 1868, 90.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 533, 549 (Remedios and Nechi, Antioquia, Colombia).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 118, 123 (Babahoyo, w. Ecuador).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 432 (Veragua, w. Panama; Remedios and Nechi, Colombia; Babahoyo, w. Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 442, part (Lion Hill, Panama; Turbo, n. Colombia; etc.).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, no. 339, 1899, 8 (Laguna del Pita, Panama).

[*Celeus*] *loricatus* GRAY, Hand-list, ii, 1870, 105, no. 8728.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 101.—SHARPE, Hand-list, ii, 1900, 226 (Costa Rica to. n. Peru).

*Celeus undatus* (not *Picus undatus* Linnæus) SCLATER, Proc. Zool. Soc. Lond., 1860, 286 (Babahoyo, w. Ecuador).

*Celeus mentalis* CASSIN, Proc. Ac. Nat. Sci. Phila., xiii, April, 1860, 137 (Turbo and Rio Atrato, n. Colombia; coll. U. S. Nat. Mus.); 1863, 324; Journ. Ac. Nat. Sci. Phila., v, 1863, 461, pl. 52, figs. 2, 3.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 367 (Panama; crit.).—GRAY, List Birds Brit. Mus., Capit. and Pictidæ, 1868, 91 (Panama).

[*Celeus*] *mentalis* GRAY, Hand-list, ii, 1870, 195, no. 8729.

*Celeopicus fraseri* MALHERBE, Mon. Pictid., ii, 1862, 16; iii, 1862, pl. 43 bis, fig. 5 (Babahoyo, w. Ecuador; coll. P. L. Sclater).

*Celeus fraseri* SCLATER, Cat. Am. Birds, 1862, 335 (Babahoyo).

*Celeus squamatus* LAWRENCE, Ibis, 1st ser., v, no. 2, April, 1863, 184 (Lion Hill, Panama; coll. G. N. Lawrence;=adult female); Ann. Lyc. N. Y., viii, 1867, 11 (Lion Hill).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 18 (Loma del Leon, Panama; crit.).

*Picus pholidotus* SUNDEVALL, Consp. Av. Picin., 1866, 87 (new name for *Celeus mentalis* Cassin and *C. squamatus* Lawrence).<sup>a</sup>

### CELEUS LORICATUS DIVERSUS Ridgway.

#### TALAMANCA WOODPECKER.

Similar to *C. l. loricatus* (of eastern Panama and northern Colombia), but rump and under parts of body decidedly darker (cinnamon), nearly, sometimes quite, concolor with foreneck and (in female) throat, blackish bars averaging larger and more numerous (especially on upper parts), and averaging decidedly larger.

<sup>a</sup> On the ground that *Celeus* not being recognized as a genus by him, the former is preoccupied by *Picus mentalis* Temminck, the latter by *P. squamatus* Vigors!

*Adult male*.—Length (skins), 188–199 (192); wing, 121.5–125 (123.9); tail, 66.5–71 (68.4); exposed culmen, 20.5–22.5 (21.5); tarsus, 20–21 (20.5); outer anterior toe, 19–20 (19.5).<sup>a</sup>

*Adult female*.—Length (skins), 190–198 (193); wing, 121.5–126.5 (124.2); tail, 67–71 (68.2); exposed culmen, 23–23.5 (23.2); tarsus, 20–21 (20.5); outer anterior toe, 19–19.5 (19.2).<sup>b</sup>

Caribbean lowlands of Costa Rica (Sipúrio and Rio Sicsola, Talamanca; Carrillo; El Hogár; Guácimo); Jiménez.

*Celeus mentalis* (not of Cassin) ZELEDÓN, Cat. Aves de Costa Rica, 1882, 283.

*Celeus loricatus* (not *Meiglyptes loricatus* Reichenbach) ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 124 (Talamanca and Jimenez, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 442, part (Talamanca and Jimenez, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 590 (Rio Sicsola, Carrillo, and Guacimo, Costa Rica; crit.).

[*Celeus*] *loricatus* SHARPE, Hand-list, ii, 1900, 226, part (Costa Rica).

### Genus *CEOPHLÆUS* Cabanis.

*Ceophloeus* *c* CABANIS, Journ. für Orn., May, 1862, 176. (Type, *Picus lineatus* Linnæus.)

Large Picidæ (wing about 160–190 mm.) with conspicuously crested head, slender, short-feathered neck, outer hind toe shorter than outer front toe, bill nearly as deep as wide at nostrils, and under parts of body (posterior to chest) pale brownish or dull yellowish barred or spotted with dusky.

Bill about as long as head or slightly shorter, stout, distinctly chisel-shaped at tip, regularly wedge-shaped in vertical profile, its width at base of maxillary tomia equal to about two-fifths the length of culmen, its depth at anterior end of nostrils a little less than its width at same point; culmen slightly convex subbasally, sharply ridged; gonys distinctly ridged, decidedly longer than mandibular rami, nearly straight, ascending terminally, slightly convex and prominent basally; supranasal ridge very distinct, extending for two-thirds or more the length of maxilla, parallel with culmen; mandibular rami with a more or less distinct oblique ridge and groove. Nostril longitudinally elliptical, situated about midway between culmen and tomium, partly covered by small antrorse hair-like prefrontal feathers. Feathers of malar region and chin small and short, not antrorse, and without bristle-like tips. Orbital region naked, including margin of eyelids. Wing relatively large; longest primaries exceeding secondaries by about one-fourth the length of wing; fifth, sixth, and seventh primaries longest, the ninth about equal to or a little shorter than third, the tenth (outermost) more

<sup>a</sup> Five specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> "Von κέω, spalten, und φλοῖος, Rinde." (Cabanis.)

than two-fifths as long as ninth. Tail nearly two-thirds as long as wing, the rectrices broad but the middle ones tapering terminally into long cuneate points. Tarsus about as long as outer hind toe with claw, the latter decidedly shorter than the anterior one.

*Coloration*.—General color plain sooty black, relieved by a broad white stripe down side of neck and along each edge of interscapular area; under parts of body (posterior to chest) pale brownish, dull buffy, or dull whitish barred or spotted with black or dusky; under wing-coverts and proximal portion of inner webs of remiges immaculate pale yellow or yellowish white; adult males with entire pileum, including conspicuous occipital crest, and a broad malar patch bright red, adult females with only the crest red. Plumage compact and firm, that of neck very short, that on sides of head (especially auricular region) very closely appressed.

*Range*.—Southern Mexico to southeastern Brazil, Paraguay, Argentina, Bolivia, and Peru. (About six species and subspecies.)

KEY TO THE SUBSPECIES OF *CEOPHLCÆUS LINEATUS*.

a. Bill blackish or dusky.

b. Larger (wing averaging more than 185 mm.); under parts white or nearly so, regularly barred with black. (Central Colombia to the Guianas, Trinidad, southern Brazil, Bolivia, etc.).... *Ceophlcæus lineatus lineatus* (extralimital).<sup>a</sup>

bb. Smaller (wing averaging much less than 185 mm.); under parts more brownish, sometimes decidedly pale brownish or brownish buffy, irregularly barred or spotted with dusky. (Santa Marta district of Colombia to Costa Rica.)

*Ceophlcæus lineatus mesorhynchus* (p. 148).

aa. Bill pale horn color or dull yellowish white.

b. Larger (wing averaging more than 175 mm., culmen averaging more than 35 mm.); suborbital and subauricular white stripe distinct, continuous; throat more extensively white. (Northern Costa Rica to eastern Mexico.)

*Ceophlcæus lineatus similis* (p. 150).

<sup>a</sup> [*Picus*] *lineatus* Linnæus, Syst. Nat., ed. 12, i, 1766, 174 (based on *Pic noir hupé de Cayenne* Brisson, Orn., iv, 31, pl. 1, fig. 2).—*Picus lineatus* Boddaert, Tabl. Pl. Enl., 1783, 45 (ex Pl. Enl., pl. 717).—*Dryocopus lineatus* Hartlaub, Index Azara's Apunt., 1847, 16; Sclater, Cat. Am. Birds, 1862, 332.—*Dryoscopus lineatus* Allen, Bull. Am. Mus. N. H., ii, 1889, 101 (Bolivia).—[*Dryotomus*] *lineatus* Swainson, Classif. Birds, ii, 1837, 308.—*C[ampephilus] lineatus* Reichenbach, Handb. Scansores, Picinæ, 1854, 391, pl. 647, figs. 4321, 4322.—*Megapicos lineatus* Des Murs, in Castelnau's Voy. Am. Sud., Ois., 1855, 17.—*Dryopicus lineatus* Malherbe, Mon. Picid., i, 1861, 39, iii, 1862, pl. 12, figs. 4, 5, 6, 7.—*C[eophlcæus] lineatus* Cabanis, Journ. für Orn., 1862, 176.—*Ceophlcæus lineatus* Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 508, part; Hellmayr, Abh. K. B. Akad. Wiss., ii kl., xxii Bd., iii Abth., 1906, 603 (crit.).

Besides the characters mentioned above, the throat is usually much less streaked with dusky, the black areas are less sooty, and the under side of the wing less pronouncedly yellow.

The species undoubtedly requires further subdivision, but the series of South American specimens at present available is much too small to justify an attempt to define more than one form from South America.



- bb. Smaller (wing averaging less than 170 mm.; culmen averaging less than 34 mm.): white suborbital and subauricular stripe indistinct (often obsolete); throat with less white. (Western and southwestern Mexico.)

*Ceophlœus lineatus scapularis* (p. 152).

**CEOPHLÆUS LINEATUS MESORHYNCHUS** (Cabanis and Heine).

**PANAMA PILEATED WOODPECKER.**

Similar to *C. l. lineatus*<sup>a</sup> but decidedly smaller; under parts of body much darker brownish buffy with the blackish bars much less regular, often in form of spots rather than bars; throat usually much more broadly streaked with blackish, black areas more sooty (especially remiges), and under side of wing more decidedly yellowish (usually distinctly buff-yellow instead of yellowish white).

*Adult male*.—Pileum and nape (including conspicuous occipital crest) bright poppy red; rest of upper parts plain black, becoming more sooty, or dark grayish brown, on primaries and distal secondaries, the longer primaries indistinctly tipped with paler (except in worn plumage); outermost scapulars with outer web and tip of inner web white, forming a broad white stripe along each side of back; a broad stripe of white along side of neck, contracted in width at upper end and thence continued, as a narrow stripe, beneath auricular and orbital regions to nostrils, the post-nasal and loreal portions, however, dull yellowish (buff to nearly tawny) instead of white; auricular and suborbital regions and posterior portion of loreal region plain brownish slate or slate-gray; malar region crimson; chin and throat streaked with white and blackish in variable relative proportion, but usually in approximately equal amount; fore-neck, chest, and upper breast plain sooty black or very dark sooty brown, usually with a fairly definite posterior margin but sometimes merging insensibly into the paler coloration of more posterior parts; ground color of remaining under parts pale brownish buff to clay color, more or less distinctly barred or spotted with sooty black or dusky; under wing-coverts and basal half (approximately) of inner webs of remiges immaculate buff-yellow (fading into paler, or yellowish white, in old feathers or very old skins); bill dark horn color or dusky, the mandible paler basally; iris light yellow to white; legs and feet dark horn color or dusky (in dried skins), light bluish gray in life; length (skins), 281–328 (312); wing, 175–189.5 (182.9); tail, 108–122 (114.3); culmen, 36.5–40 (37.9); tarsus, 27–30 (28.2); outer anterior toe, 22–27.5 (24.8).<sup>b</sup>

*Adult female*.—Similar to the adult male but forehead and anterior portion of crown black, and malar region blackish slate or slate-black; length (skins), 300–321 (312); wing, 176.5–188 (182.1); tail,

<sup>a</sup> See p. 147.

<sup>b</sup> Thirteen specimens.

105-122 (112.5); culmen, 33-37 (35.5); tarsus, 27-29 (28); outer anterior toe, 22-27.5 (24.6).<sup>a</sup>

*Young male*.—Similar to the adult male but coloration duller, the malar region dusky exteriorly, dull red centrally, the under parts of body light sooty grayish brown, the feathers indistinctly tipped with paler and with an indistinct spot of dusky.

Central and southern Costa Rica (Boruca; Pozo del Rio Grande; El Pozo de Térraba; Paso Real; El General; Pigres; Barranca de Punta Arenas; San José; Guayabo; Bonilla; mouth of Rio Matina) and Panamá (Panamá; Lion Hill; Chepo; Santa Fe de Veragua). Santa Marta district of Colombia (Santa Marta; Bonda; Minca; Valparaiso; San Antonio; La Concepción)?

*Dryocopus scapularis* (not *Picus scapularis* Vigors) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 333 (Panama).

*C[eophloeus] mesorhynchus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 86 (Costa Rica; coll. Berlin Mus.).

*Dryocopus mesorhynchus* GRAY, List Birds Brit. Mus., Capit. and Picidæ, 1868, 60 ("Caraccas," i. e., Cartago?, Costa Rica).

[*Dryocopus*] *mesorhynchus* GRAY, Hand-list, ii, 1870, 189, no. 8641.

[*Picus lineatus*.] Var. *occidentalis* SUNDEVALL, Consp. Av. Picin., 1866, 8 (new name for *Ceophloeus mesorhynchus* Cabanis and Heine).

*Dryocopus lineatus* (not *Picus lineatus* Linnæus) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 366 (Lion Hill, Panama).

<sup>a</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from Costa Rica.....	183.8	113.8	38.1	28.2	24.9
Two adult males from Panama.....	180	116	37.3	28.2	24.7
Ten adult males (intermediates) from Santa Marta district, Colombia.....	184.2	117.3	38.3	28.6	24.5
Two adult males ( <i>C. l. lineatus</i> ?) from central Colombia.....	193	126	37.8	29	25.5
Two adult males ( <i>C. l. lineatus</i> ?) from Venezuela.....	186	112.5	38	29.3	24.3
Two adult males ( <i>C. l. lineatus</i> ?) from Trinidad.....	192.8	117.3	39.3	30	25.8
Six adult males ( <i>C. l. lineatus</i> ) from the Guianas.....	195.3	118.6	37.8	29.7	24.5
Six adult males ( <i>C. l. lineatus</i> ) from Brazil.....	189.8	121.5	39.8	28.6	24
One adult male ( <i>C. l. lineatus</i> ?) from Bolivia.....	190.5	122	39	.....	.....
FEMALES.					
Ten adult females from Costa Rica.....	182.2	114.6	35.4	27.9	24.6
One adult female from Panama.....	181	112.5	36.5	29	24
Ten adult females (intermediates) from Santa Marta district, Colombia.....	181.5	120	37.2	27.7	23.2
One adult female ( <i>C. l. lineatus</i> ?) from central Colombia.....	201.5	126	.....	29	24.5
Three adult females ( <i>C. l. lineatus</i> ?) from Venezuela.....	188	123	36.5	28	24
Two adult females ( <i>C. l. lineatus</i> ?) from Trinidad.....	184.3	118.5	37.5	28	25.3
Two adult females ( <i>C. l. lineatus</i> ?) from Surinam.....	196	126.8	36	28	25.3
Three adult females ( <i>C. l. lineatus</i> ) from southwestern Brazil (Chapada).....	186.2	119	37.3	27.5	25.5
Three adult females ( <i>C. l. lineatus</i> ?) from Bolivia.....	189.8	122.5	36.5	27.7	23.2

Partly owing to lack of sufficient material I have not attempted any revision of the South American representatives of this species, which undoubtedly include two or more forms.

*Geophläus lineatus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 508, part (Santa Fé de Veragua and Chepo, Panama).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 451, excl. syn. part (Santa Fe de Veragua, Chiriqui, Lion Hill, and Chepo, Panama).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 Loma del Leon, Panama); Auk, xxiv, 1907, 293 (Boruca, Pozo del Rio Grande, and Barranca de Punta Arenas, w. Costa Rica).

*Geophloeus lineatus lineatus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 592 (lowlands of s. w. Costa Rica; crit.).

*Dryocopus fuscipennis* (not of Sclater, 1860) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 366 (crit.).

### CEOPHLÆUS LINEATUS SIMILIS (Lesson).

#### WHITE-BILLED PILEATED WOODPECKER.

Similar to *C. l. mesorhynchus*, but bill pale horn color or dull yellowish white, and average measurements slightly smaller.

*Adult male*.—Length (skins), 264–350 (313); wing, 166–192.5 (179.7); tail, 103–127 (113.9); culmen, 34–39 (36.3); tarsus, 24–29 (26.7); outer anterior toe, 22.5–26 (24.4).<sup>a</sup>

*Adult female*.—Length (skins), 270–325 (315); wing, 161–186 (176.6); tail, 102–125 (110.6); culmen, 32.5–37 (35.1); tarsus, 25–27.5 (26.1); outer anterior toe, 22–25.5 (24).<sup>b</sup>

<sup>a</sup> Twenty-nine specimens.

<sup>b</sup> Twenty-seven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Tamaulipas (7) and Vera Cruz (3).....	185.3	117.6	36	27.3	24.6
Four adult males from Oaxaca.....	174.6	112.8	35.5	26.3	23.8
Four adult males from Yucatan.....	175.9	110.8	37.6	26.9	24.4
Four adult males from Guatemala.....	176.3	110.6	36	25.8	25
One adult male from Honduras.....	178	113	36.5	26.5	25
Four adult males from Nicaragua.....	178	111.9	35.6	25.9	23.8
Two adult males from Costa Rica.....	180.5	114.5	38.8	27.8	23.5
Ten adult males ( <i>C. l. scapularis</i> ) from Guerrero (3), Colima (1), Sinaloa (6).....	169.4	105.8	33.3	24.9	22.7
FEMALES.					
Ten adult females from Tamaulipas (2) and Vera Cruz (8).....	179.8	114.3	34.6	26.3	23.5
One adult female from Oaxaca.....	168	110.5	33	.....	.....
Four adult females from Yucatan.....	173.4	105.1	35.5	25.8	23.8
Two adult females from Guatemala.....	180	109.3	35.5	26.5	25
Four adult females from British Honduras.....	173.6	107	35.8	26.6	23.6
Three adult females from Honduras.....	173	108.5	35.5	26.3	24.5
One adult female from Nicaragua.....	173.5	108.5	33.5	26.5	25
Two adult females from Costa Rica.....	180.8	118	35.8	26.8	24
Nine adult females ( <i>C. l. scapularis</i> ) from Guerrero (4), Tepic (2), and Sinaloa (3).....	166	106.1	30.4	24.7	22.2

Notwithstanding the larger average size of specimens from Vera Cruz and Tamaulipas, I am not disposed to separate them, there being no color differences that I am able to discern.

Of the five Costa Rican specimens examined all are clearly intermediates between this form and *C. l. mesorhynchus*, and would be referable to the latter except for the paler bill. It was possibly on a specimen of this character that Cabanis and Heine based their supposed species.



Eastern Mexico, in States of Nuevo León (Hacienda de la Cruz; Villa Grande), Tamaulipas (Victória; Sierra Madre above Victória; Jiménez; Xicotencátl; Rio Pilón; Tampico; Alta Mira; Aldama; Soto la Marina; Santa Engracia; Rio Santa; Santa Leonora; Cañon de Guiaves), San Luis Potosí (Valles; Rio Juan Martín), Vera Cruz (Jalapa; Orizaba; Miradór; Potrero near Córdoba; Uvero; Pasa Nueva; Zentla near Huatusco; Atoyác; Antigua; Tlalcotalpám; Chichicaxtla; Otatitlán; Motzorongo), Oaxaca (Tehuántepec City; Santa Efigénia; Chimalapa; Chihuitán; Cacoprieto), Yucatan (Mérida; Izamál; Temáx; La Vega; Buctzotz; Tunkas; Chichen-Itza; San Felipe), and Chiapas (Tonalá), and southward through Guatemala (Dueñas; San Gerónimo; Retalhuleu; Sequanquín; Savana Grande; Rio Grande; Los Amates), British Honduras (Belize; near Manatee Lagoon), Honduras (Tigre Island; Omoa; San Pedro; Yaruca; Céiba; Truxillo), Salvadór (La Libertád; San Carlos), Nicaragua (San Gerónimo, Chinandega; San Rafael del Norte; Rio Escondido; Momotombo; Sucuyá; León) to Costa Rica (Bolsón; Barranca de Punta Arenas; Aguacate Mountains; Cerro de la Candelária; Pozo Azul de Pirrís; Rio Reventazón).<sup>a</sup>

*Dryocopus scapularis* (not *Picus scapularis* Vigors) SCLATER, Proc. Zool. Soc. Lond., 1856, 306 (Cordova, Vera Cruz); 1858, 359 (Tigre I., Honduras); 1859, 367 (Jalapa, Vera Cruz); Cat. Am. Birds, 1862, 333 ("Mexico").—TAYLOR, Ibis, 1860, 119 (Tigre I.).—MOORE, Proc. Zool. Soc. Lond., 1859, 60 (Omoa).—SCLATER and SALVIN, Ibis, 1859, 135 (Vera Paz, Guatemala; Honduras); Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).—(?) GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 61 ("Mexico").—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 130 (Costa Rica); ix, 1869, 205 (Mérida, Yucatan); Bull. U. S. Nat. Mus., no. 4, 1876, 24 (Chihuitan and Santa Efigénia, Oaxaca).—SUMICHRIST, La Naturaleza, v, 1882, 240 (Cacoprieto, Oaxaca; Mirador and Uvero, Vera Cruz).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23.

*Dryopicus scapularis* MALHERBE, Mon. Pict., i, 1861, 44; iii, 1862, pl. 10, figs. 1, 2, 3.

*Ceophlæus scapularis* CABANIS, Journ. für Orn., 1862, 176 (Costa Rica; crit.).

*C[ceophlæus] scapularis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 85 (Jalapa).

*[Ceophlæus] scapularis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (Jalapa).

*Ceophlæus scapularis* ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 130 (Cerro de la Candelaria, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., viii, 1885, 582 (Truxillo, Honduras).—HARGITT, Cat. Birds Brit. Mus., xvi, 1890, 510, part (Nuevo Leon; Aldama, Tampico, and Sierra Madre above Ciudad Victoria, Tamaulipas; Valles, San Luis Potosi; Rio Juan Martin, Zentla near Huatusco, Atoyac, and Jalapa, Vera Cruz; Buctzotz, Yucatan; Belize, Brit. Honduras; Vera Paz, Rio Grande, San Gerónimo, Dueñas, and Retalhuleu, Guatemala; Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 518 (Rio Escondido, Nicaragua); xviii, 1896, 629 (Alta Mira, Tamaulipas).—SALVIN and GODMAN, Biol. Centr.-

<sup>a</sup> The specimen from the Rio Reventazón is in reality an intermediate between this form and *C. l. mesorhynchus*.

- Am., Aves, ii, 1895, 450 (Hacienda de la Cruz and Villa Grande, Nuevo Leon; localities in Tamaulipas; Hacienda Tortugas, Omealca, San Lorenzo, Alvarado, Plan del Rio, Zentla, Cordova, Mirador, Vega del Casadero, Playa Vicente, etc., Vera Cruz; Tehuantepec, etc., Oaxaca; Tonalá, Chiapas; Izamal, etc., Yucatan; Savana Grande, etc., Guatemala; La Libertad, Salvador; localities in Honduras; Leon, Momotombo, Sucuyá, etc., Nicaragua; Aguacate Mts., and Candelaria, Costa Rica).—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 285 (Chichen-Itza, Yucatan).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 146 (Ceiba and Yaruca, Honduras); Auk, xxiv, 1907, 293 (Barranca de Punta Arenas, w. Costa Rica; crit.).—COLE, Bull. Mus. Comp. Zool., i, 1906, 131 (Chichen-Itza).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 92 (Los Amates, e. Guatemala).
- [*Ceophlæus*] *scapularis* RIDGWAY, Man. N. Am. Birds, 1887, 290, part.
- [*Ceophlæus*] *scapularis* SHARPE, Hand-list, ii, 1900, 232, part.
- Ceophlæus lineatus scapularis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 593 (Costa Rica; crit.).—PHILLIPS, Auk, xxviii, 1911, 76 (Alta Mira, Rio Santa, Santa Leonora, and Cañon de Guiaves, Tamaulipas).
- Hylotomus scapularis* (not of Ridgway, 1880) NUTTING, Proc. U. S. Nat. Mus., vii, 1884, 387 (Sucuyá, Nicaragua).
- Picus similis* LESSON, Compl. Œuvr. Buffon, xx, April, 1847 ("Descr. Mamm. et d'Ois."), 204 (San Carlos, "république du Centre-Amérique," i, e., Salvador?).
- (?)[*Campephilus lineatus*] Var.? *C. leucopterylus* REICHENBACH, Handb., Scansores, Picinæ, 1854, 392, pl. 647, figs. 4319, 4320 ("Mexiko").
- [*Campephilus*] *leucorhamphus* REICHENBACH, Handb., Scansores, Picinæ, 1854, 393, pl. 648, figs. 4327, 4328 ("Mexiko"; coll. Berlin Mus.).
- [*Dryocopus*] *leucorhamphus* LICHTENSTEIN, Nom. Mus. Berol., 1854, 75.
- (?) *Picus lineatus* (not of Linnæus?) AUDUBON,<sup>a</sup> Orn. Biog., v, 1839, 315 ("Columbia River"); Synopsis, 1839, 176 ("Columbia River"); Birds Am., oct. ed., iv, 1842, 233 ("near Fort Vancouver," Washington).
- (?) *Dryotomus delatii* BONAPARTE, Notes Orn. Coll. Delattre, 1854, 85 ("Californie").
- Dryocopus erythrops* (not *Picus erythrops* Valenciennes) SCLATER, Proc. Zool. Soc. Lond., 1856, 306 (Cordova, Vera Cruz).

### CEOPHLÆUS LINEATUS SCAPULARIS (Vigors).

#### VIGORS' PILEATED WOODPECKER.

Similar to *C. l. similis*, but smaller, with the whitish suborbital and subauricular stripe indistinct, frequently obsolete except for loreal portion, and throat with much less white.

*Adult male*.—Length (skins), 267–310 (292); wing, 166–173 (169.4); tail, 103.5–111.5 (105.8); culmen, 32–36 (33.3); tarsus, 23.5–27 (24.9); outer anterior toe, 21–24 (22.7).<sup>b</sup>

<sup>a</sup> Without examination of the specimen described by Audubon, erroneously supposed to have been obtained near Fort Vancouver, Washington, it is quite impossible to determine to which form of the genus it belongs. Judging from Audubon's description, however, which indicates absence of the white stripes on back, it seems more likely to belong to *C. erythrops* (Valenciennes) than to any of the forms of *C. lineatus*.

<sup>b</sup> Ten specimens.

*Adult female*.—Length (skins), 260–303 (284); wing, 162.5–169 (166); tail, 101–111 (106.1); culmen, 29–32.5 (30.4); tarsus, 23.5–26 (24.7); outer anterior toe, 21–23.5 (22.2).<sup>a</sup>

Western Mexico, in States of Sonora (Sierra de Álamos), Sinaloa (Mazatlán; Rosário; Culiacán; Escuinapa; Rio Juana Gomez), Jalisco (Plains of Colima), Colima (Rio Tupila), Guerrero (Acapulco; Acahuitzotla; Siluatenejo; Papaya; La Lagunilla) and western Oaxaca (Putla), and Territory of Tepic (San Blas).

*Picus scapularis* VIGORS, Zool. Journ., iv, 1829, 354 (San Blas, Tepic, w. Mexico; coll. Zool. Soc.); Zool. Voy. 'Blossom,' 1839, 23 (San Blas).—BAIRD, in Rep. Stansbury's Surv. Gt. Salt Lake, 1852, 333.—SUNDEVALL, Consp. Av. Picin., 1866, 8, part.

*P[icus] scapularis* WAGLER, Isis, 1829, 509.

*D[ryocopus] scapularis* GRAY, Gen. Birds, ii, 1845, 436.

*[Dryocopus] scapularis* BONAPARTE, Consp. Av., i, 1850, 133, part.—GRAY, Hand-list, ii, 1870, 118, no. 8638.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

*Dryocopus scapularis* LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 293 (Mazatlan, Sinaloa; Plains of Colima and Rio Tupila, Colima).

*C[ampephilus] scapularis* REICHENBACH, Handb., Scansores, Picinæ, 1854, 394 (San Blas).

*[Driopicus] scapularis* BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 8).

*Ceophlæus scapularis* HARGITT, Cat. Birds Brit. Mus., xvi, 1890, 510, part (Sierra de Alamos, Sonora; Mazatlan; San Blas; Putla, w. Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 450, part (Sierra de Alamos; Mazatlan; San Blas; Plains of Colima; Rio Tupila; Putla; Acapulco, Guerrero).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 352 (Escuinapa and Rio Juana Gomez, s. Sinaloa).—BAILEY (H. H.), Auk, xxiii, 1906, 388 (San Blas, Tepic).

*C[ceophlæus] scapularis* RIDGWAY, Man. N. Am. Birds, 1887, 290, part.

*[Ceophlæus] scapularis* SHARPE, Hand-list, ii, 1900, 232, part.

### Genus *PHLÆOTOMUS* Cabanis and Heine.

*Driopicus* (not *Dryopicos* Malherbe, 1849, nor *Dryopicus* Malherbe, 1850) BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 8). (Type, *Picus pileatus* Linnæus; see Stejneger, Auk, ii, 1885, 52.)

*Hylatomus* (not *Hylatoma* Latreille, 1804) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 107. (Type, by orig. desig., *Picus pileatus* Linnæus.)

*Hylotomus* (emendation) CABANIS, Journ. für Orn., 1862, 176.

*Phloeotomus* <sup>b</sup> CABANIS and HEINE, Mus. Hein., iv, heft 2, July, 1863, 102. (Type, by monotypy, *Picus pileatus* Linnæus.)

Very large Picidæ (wing about 210–255 mm.) resembling *Ceophlæus*, but differing in much more depressed bill with straighter culmen and relatively longer gonys (nearly to quite twice as long as mandibular rami), greater development of postnasal (prefrontal) antrorse plumes,

<sup>a</sup> Nine specimens.

<sup>b</sup> "Aus *φλοιός* (Rinde) und *τέμνω* (schneiden) zusammengesetzt." (Cabanis and Heine.)



softer and more blended plumage (especially that of neck), relatively smaller and narrower tenth primary, and relatively much longer wing and tail (the former more than five times, the latter nearly three and a half times, as long as culmen),<sup>a</sup> and under parts of body uniform black; also resembling and perhaps more nearly related to *Picus*,<sup>b</sup> but conspicuously crested, tenth primary less pointed at tip, and with white stripes on head and neck and much white on under side of wings.<sup>c</sup>

Bill about as long as head or decidedly shorter, depressed, broad basally (its width at anterior end of nostrils very much greater than its depth at same point), regularly wedge-shaped in vertical profile or, sometimes, rather abruptly contracted terminally to the distinctly chisel-shaped tip; culmen straight, very slightly convex, very distinctly ridged; gonys more than one and a half times as long as mandibular rami, very distinctly ridged, nearly if not quite straight, ascending terminally; supranasal ridge very distinct, parallel with culmen, running to edge of maxilla at about one-fourth the distance from tip to base of tomium. Nostril longitudinally elliptical, rather small, situated about midway between culmen and gonys, covered by a well-developed prefrontal tuft of antrorse hair-like feathers. Feathers of malar apex antrorse and hair-like but small, those of chin with inconspicuous semiantrorse bristle-like tips. Orbital region naked, including margin of eyelids (except a few minute feathers on posterior portion of lower lid). Wing relatively large; longest primaries exceeding secondaries by about one-fourth the length of wing; sixth, or fifth, sixth, and seventh primaries longest, the ninth about equal to second, the tenth (outermost) much less than half (a little more than two-fifths) as long as ninth, slightly contracted terminally, but tip rounded. Tail about two-thirds as long as wing, the rectrices very broad, the middle pair contracted and distinctly decurved terminally. Tarsus nearly as long as outer hind toe with claw, this decidedly shorter than the anterior one; tarsi and toes relatively rather slender, but claws (except that of hallux) very large and strongly curved.

*Coloration*.—General color uniform sooty or slaty black, relieved by a broad white stripe along side of neck and thence (narrowing anteriorly) along side of head to nostrils, a narrow white postocular stripe, and a white (or partly white) gular area; axillars, under

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<sup>a</sup> In *Ceophlæus* the wing is only about four and a half, the tail only three times, as long as culmen.

<sup>b</sup> See p. 9. *Phlæotomus* is intermediate in both structural and color characters between *Picus* and *Ceophlæus*, agreeing best in structure (except possession of a crest, which is absent in *Picus*) with the former and in coloration better with the latter.

<sup>c</sup> In *Picus* there is no white at all, the plumage being uniform black, with red pileum in male, red occiput in female.

wing-coverts, and proximal portion of inner webs of remiges immaculate white or very pale yellow; adult male with entire pileum (including the conspicuous, pointed, occipital crest) and a broad malar stripe bright red, the adult female with only the crest red, the forehead, crown, and malar region being grayish brown or olive.

*Range*.—North America. (Monotypic?) <sup>a</sup>

KEY TO THE SUBSPECIES OF *PHLÆOTOMUS PILEATUS*.

- a*. Smaller (wing averaging less than 230, culmen averaging less than 50).
  - b*. Smaller (wing averaging 226.1 in male, 220.8 in female; culmen averaging 46.5 in male, 43.8 in female); coloration blacker or less slaty. (Middle and southern Florida.).....*Phlæotomus pileatus floridanus* (p. 159).
  - bb*. Larger (wing averaging 228.4 in male, 221.6 in female; culmen averaging 49.7 in male, 44.9 in female); coloration more slaty blackish. (Southeastern United States, including northern Florida, north to Maryland, southern Indiana, Illinois, and Missouri, etc.)  
*Phlæotomus pileatus pileatus* (p. 155).
- aa*. Larger (wing averaging more than 230, culmen averaging more than 50).
  - b*. Larger (wing averaging 243.3 in male, 236.7 in female; culmen averaging 58 in male, 52 in female; coloration more slaty (more so than in *P. p. pileatus*); whitish tips to longer primaries always well-developed. (Northern United States, east of Rocky Mountains, north to New Brunswick, Nova Scotia, Kewatin, Mackenzie, etc.).....*Phlæotomus pileatus abieticola* (p. 160).
  - bb*. Smaller (wing averaging 237 in male, 228.1 in female; culmen averaging 54.4 in male, 48.7 in female); coloration blacker or more sooty; whitish tips to longer primaries usually much reduced in size, sometimes obsolete. (North-west coast district, from British Columbia to northern California, east to Idaho and northwestern Montana, and south to southern Sierra Nevada.)  
*Phlæotomus pileatus picinus* (p. 162).

*PHLÆOTOMUS PILEATUS PILEATUS* (Linnæus).

PILEATED WOODPECKER.

*Adult male*.—Pileum, including conspicuous occipital crest, bright poppy red, somewhat darker (approaching crimson) on forehead; a rather narrow postocular stripe of yellowish white, and beneath this a broad auricular stripe of slate color or brownish slate, involving also suborbital region (narrowly) and posterior portion of loreal region; upper portion of nasal tufts grayish with terminal portion of bristle-like feathers blackish, this connected with the slate color of orbital region by a narrow line of dusky; lower portion of nasal tufts dull pale yellowish; a sharply defined stripe along lower portion of lores dull yellow (buff-yellow, maize yellow or naples yellow), passing gradually into yellowish white or pale primrose yellow posteriorly, where forming a broad band beneath the slaty auricu-

<sup>a</sup> A South American (Argentine) species, *Phloeotomus schulzi* Cabanis (*Campephilus schulzi* Sclater and Hudson, *Campephilus pileatus* var. *schulzi* Frenzel, *Dryotomus schulzi* Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 517) has been referred to this genus. I have not seen a specimen, but on geographical grounds alone strongly doubt that it is congeneric with *P. pileatus*.

lar area, thence extending downward along side of neck to axillars and under wing-coverts, which, together with basal half (approximately) of inner webs of remiges, are yellowish white or primrose yellow; malar region crimson for greater part, the posterior portion dark slate color or blackish slate; chin and throat white or yellowish white, sometimes more or less streaked or suffused posteriorly or medially with grayish; rest of plumage plain sooty slate-black or blackish slate,<sup>a</sup> the under parts slightly but not distinctly lighter; feathers of sides and flanks margined terminally with whitish; basal portion of outer webs of remiges white or yellowish white, that on secondaries usually concealed by greater coverts, that on primaries showing as a small but distinct area beyond tip of primary coverts; maxilla slate color or slate-gray, darker terminally; mandible bluish white basally, shading through pale grayish blue or bluish gray into slate color or slate-gray at tip; iris cream yellow, naples yellow, or buff-yellow; naked orbital skin grayish olive; legs and feet with scutella black, the interspaces pale gray or whitish; length (skins), 391-437 (410); wing, 220-235 (228.4); tail, 144-161 (152.9); culmen, 46-52.5 (49.7); tarsus, 33-35 (34.1); outer anterior toe, 26-28.5 (27.3).<sup>b</sup>

*Adult female*.—Similar to the adult male, but forehead and anterior half (more or less) of crown grayish brown or olive and malar region slate color; length (skins), 365-410 (390); wing, 214-233 (221.6); tail, 140-158.5 (149.4); culmen, 41.5-49 (44.9); tarsus, 31-34.5 (32.5); outer anterior toe, 24-27.5 (25.5).<sup>c</sup>

<sup>a</sup> The color is more slaty in more recently killed specimens or those in fresh plumage, more sooty or brownish in older plumage or older skins.

<sup>b</sup> Eighteen specimens.

<sup>c</sup> Twenty-two specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males ( <i>P. p. floridanus</i> ) from central and southern Florida.....	226.1	150.7	46.5	33.6	26.9
Two adult males from northern Florida.....	227.5	153.5	47.5	33.5	27.7
One adult male from Mississippi.....	224	152	49.5	35	26
Three adult males from Tennessee.....	226	155.7	49.3	33.8	27.5
One adult male from Arkansas.....	227	149	50		
Five adult males from Texas.....	226.8	148.4	50	34.6	27.9
Two adult males from southern Illinois.....	233	159	50.7	33.5	27.2
One adult male (intermediate between <i>P. p. pileatus</i> and <i>P. p. abieticola</i> ) from West Virginia.....	235	159	55	36	28.5
Two adult males from Maryland (1) and District of Columbia (1).....	228.5	151.7	50.7	34.2	26.2
One adult male (intermediate) from southeastern Pennsylvania (Carlisle).....	238	162	52.5	34.5	26
Four adult males ( <i>P. p. abieticola</i> ) from western Pennsylvania.....	242	161.7	57.7	34.1	27.5
Four adult males ( <i>P. p. abieticola</i> ) from Wisconsin (1), Minnesota (2), and Manitoba (1).....	244	164.1	58.1	34.9	26.6



*Young male*.—Similar to the adult male, but red of head paler and duller, that of forehead, fore part of crown, and malar region much less uniform, the red being restricted to the tips of the feathers,

Footnote—Continued.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES—continued.					
Three adult males ( <i>P. p. abieticola</i> ) from Kewatin (1) and Mackenzie (2).....	243.7	158.3	58.3	35.2	27.3
Eight adult males ( <i>P. p. picinus</i> ) from British Columbia.....	237.7	158.1	55.8	34.9	26.6
Five adult males ( <i>P. p. picinus</i> ) from Oregon.....	235	157.3	53	33.8	26.4
Two adult males ( <i>P. p. picinus</i> ) from California.....	238	152.5	52.5	33.8	26.8
One adult male ( <i>P. p. picinus</i> ) from Idaho.....	240	158.5	54.5	35	26
FEMALES.					
Ten adult females ( <i>P. p. floridanus</i> ) from central and southern Florida.....	220.8	145.5	43.8	32.7	25.3
One adult female from Georgia.....	222	142	44.5	31.5	24
Two adult females from Alabama.....	221	142.8	44.5	32.2	25.7
Two adult females from Louisiana.....	217.5	150.7	43	33	26
Two adult females from Tennessee.....	218	148.2	44.2	31.3	24
Two adult females from Indian Territory (1) and Oklahoma (1).....	215	148.2	46	32.5	24.7
Three adult females from Texas.....	225.7	155.7	45	33.5	26.8
Two adult females from southern Illinois.....	225	144.7	47.5	33	27
Two adult females from North Carolina.....	220.5	147.5	43.5	(32)	(24)
Six adult females from Virginia (4), District of Columbia (1), and Maryland (1).....	222.6	151.9	45.6	32.2	25.2
One adult female (type of <i>P. p. abieticola</i> ) from Maine.....	232	162.5	52.5	33.5	25
One adult female ( <i>P. p. abieticola</i> ) from Wisconsin.....	243	160.5	53	34	25.5
One adult female ( <i>P. p. abieticola</i> ) from Minnesota.....	235	154.5	50.5	35.5	27
Three adult females ( <i>P. p. picinus</i> ) from British Columbia.....	230.7	151.7	49.8	34	25.8
One adult female ( <i>P. p. picinus</i> ) from Washington.....	227	159.5	50	34	26
One adult female ( <i>P. p. picinus</i> ) from Oregon.....	223	150	46	34	26
Three adult females ( <i>P. p. picinus</i> ) from California.....	227.7	149.7	48	33.7	25

I have found it very difficult to decide as to the propriety of separating a form of this species from central and southern Florida, but after having several times laid out and carefully compared the entire series of specimens from more southern localities, have come to the conclusion that to do so will, apparently, best express the facts of the case. Going by size alone, there is little difference between specimens from southern and central Florida and those from localities as far northward as Maryland (lowlands), southern Illinois, and Missouri; in fact some of these more northern specimens are quite as small as Florida ones. But the series from central and southern Florida are uniformly decidedly blacker than the rest, the few examples (two from Alabama and one or two from Texas) of the latter that approach the Florida specimens proving, on close comparison, to be of an appreciably more slaty or sooty hue. Indeed, all the specimens examined from northern Florida (Gainesville, Mayport, and Pilot Town) are distinctly lighter in color than those from more southern localities in that State. Some of the more northern examples are quite as slaty as the extreme northern form (*P. p. abieticola*) but they are distinctly smaller. In other words, I have restricted the name *pileatus* to an intermediate form, characterized by the small size of *P. p. floridanus* combined with an appreciably lighter (more slaty or sooty) coloration, often approaching closely the lightness of hue of *P. p. abieticola*.

which are otherwise brownish slate or slate-grayish, and the general color of body, wings, etc., lighter and more sooty.

*Young female*.—Similar to the young male, but forehead and most of crown grayish brown, the latter with a paler terminal spot on each feather, and malar region dark grayish brown or sooty slate color.

Lower Austral zone and southern portion of Upper Austral zone of eastern United States, from northern Florida (Pilot Town; Mayport; Gainesville) west to southern and central Texas (Cleveland; near Alvin; Sour Lake; Matagorda; Jefferson; Velasco; San Antonio River; Victoria County; Liberty; Santa Maria; Navarro County; Lee County; Colorado and Brazos Rivers), Arkansas (Clinton), Indian Territory (Red Fork; Dougherty; Hartshorne), Oklahoma (Mount Scott), and southwestern Missouri (Independence); north to coast and midland districts of Maryland, southeastern Pennsylvania (Carlisle), southern Indiana, southern Illinois, etc.<sup>a</sup>

[*Picus*] *pileatus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 113 (South Carolina; based on *The larger red-crested Woodpecker* Catesby, Nat. Hist. Carolina, i, 17, pl. 17); ed. 12, i, 1766, 173.—GMELIN, Syst. Nat., i, pt. i, 1788, 425.—LATHAM, Index Orn., i, 1790, 225; Gen. Hist. Birds, iii, 1822, 370.

*Picus pileatus* VIEILLOT, Ois. Am. Sept., ii, 1807, 58, pl. 110; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 84.—WILSON, Am. Orn., iv, 1811, 27, pl. 29, fig. 1 (error fig. 2 on plate).—STEPHENS, Shaw's Gen. Zool., ix, 1815, 158, pl. 32.—BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1313.—VALENCIENNES, Dict. Sci. Nat., xl, 1826, 177.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826 (Synop. Birds U. S.), 44, part.—DRAPIER, Dict. Class. d'Hist. Nat., xiii, 1828, 500.—LESSON, Traité d'Orn., 1831, 229.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 567, part; 2d ed., 1840, 671, part.—AUDUBON, Orn. Biog., ii, 1834, 74, part, pl. 111; v, 1839, 533, part; Synopsis, 1839, 176, part; Birds Am., oct. ed., iv, 1842, 226, part, pl. 257.—SUNDEVALI Consp. Av. Picin., 1866, 8, part.

[*Picus*] *pileatus* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 368, part; Obs. Wilson's Am. Orn., 1826 [28], part.—MAXIMILIAN, Journ. für Orn., 1858, 352 (near New Harmony, s. w. Indiana).

[*Dryocopus*] *pileatus* BOIE, Isis, 1828, 326.—BONAPARTE, Consp. Av., i, 1850, 132.—LICHTENSTEIN, Nomencl. Mus. Berol., 1854, 75.—GRAY, Hand-list, ii, 1870, 188, no. 8635, part.

[*Dryocopus*] *pileatus* GRAY, Gen. Birds, ii, 1845, 436.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 377, part (s. Illinois).

*Dryocopus pileatus* WOODHOUSE, Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 90 (Indian Territory; Texas; New Mexico?).—SCLATER, Cat. Am. Birds, 1862, 322.

*Dryotomus pileatus* SWAINSON, Fauna Bor.-Am., ii, 1831, p. xxvi; Classif. Birds, ii, 1837, 308, part.—BONAPARTE, Geog. and Comp. List, 1838, 39.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 515, part (District Columbia; s. Missouri; Union Co., Illinois; San Patricio, Texas).

*Picus (Dryotomus) pileatus* SWAINSON, Fauna Bor.-Am., ii, 1831, 304, part.

[*Dryotomus*] *pileatus* SHARPE, Hand-list, ii, 1900, 232, part.

<sup>a</sup> Specimens representing the more northern localities mentioned are not quite typical, but are decidedly nearer, in size at least, to specimens from Georgia and northern Florida, etc., than to *P. p. abieticola*.

- Dryopicus pileatus* BONAPARTE, Notes Orn. Coll. Delattre, 1854, 85.—MALHERBE, Mon. Pict., i, 1861, 34, part; iii, pl. 11, figs. 5, 6.
- D[riopicus] pileatus* BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 8).
- C[ampephilus] pileatus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 391, pl. 647, figs. 4317, 4318.
- Hylatomus pileatus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 107, part; Cat. N. Am. Birds, 1859, no. 90, part.—DRESSER, Ibis, 1865, 469 (Colorado and Brazos rivers, Texas).—MAYNARD, Birds E. N. Am., 1879, 234, part.
- [Hylotomus] pileatus* COUES, Key N. Am. Birds, 1872, 192, part.
- Hylotomus pileatus* COUES, Check List, 1873, no. 294, part; 2d ed., 1882, no. 432, part; Birds North West, 1874, 278, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 551, part.—MERRILL (J. C.), Proc. U. S. Nat. Mus., i, 1878, 151 (Santa Maria, s. Texas).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, part; Nom. N. Am. Birds, 1881, no. 371, part.—OGILBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 58 (Navarro Co., Texas).—NEHRLING, Bull. Nutt. Orn. Club, vii, 1882, 170 (s. e. Texas; habits; descr. nest and eggs).
- H[ylotomus] pileatus* COUES, Key N. Am. Birds, 2d ed., 1882, 480, part.
- P[hloeotomus] pilcatus* CABANIS and HEINE, Mus. Hein., iv, heft ii, 1863, 102 ("Nord-Amerika").
- [Phloeotomus] pileatus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 216 (Georgia).
- Phloeotomus pilcatus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 374, part.—WAYNE, Birds South Carolina, 1910, 91 (habits; descr. nest and eggs).—(?)HOWELL, Auk, xxvii, 1910, 301 (Walden Ridge and Cross Mt., e. Tennessee).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 33 (food).
- Phloeotomus pileatus pileatus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 192, part.—RIDGWAY, Proc. Biol. Soc. Wash., xxiv, 1911, 33 (geog. range).
- C[eophloeus] pileatus* CABANIS, Journ. für Orn., 1862, 176.
- Ceophloeus pileatus* STEJNEGER, Auk, ii, 1885, 52.
- Ceophloeus pileatus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 405, part.—RIDGWAY, Orn. Illinois, i, 1889, 382, part (s. Illinois).—HASBROUCK, Auk, vi, 1889, 238 (centr. and w. Texas).—SINGLEY, Rep. Geol. Surv. Tex., 1894, 350 (Lee Co., Texas).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 102, part.—BEYER, Proc. Louisiana Soc. Nat. for 1897-99 (1900), 102 (Louisiana).—STOCKARD, Auk, xxi, 1904, 463-466 (breeding habits in Mississippi).
- C[eophloeus] pileatus* RIDGWAY, Man. N. Am. Birds, 1887, 289, part.
- Ceophloeus pileatus abieticola* (not of Bangs) FERRY, Auk, xxiv, 1907, 432 (Cairo, Illinois, Aug.).
- Phloeotomus pileatus abieticola* WOODRUFF, Auk, xxv, 1908, 200 (Shannon Co., Missouri, breeding).—PHILIPP, Auk, xxvii, 1910, 318 (Lake Ellis, e. North Carolina).—BALDWIN, Auk, xxviii, 1911, 491 (Franklin Co., Missouri, July).

### PHLEOTOMUS PILEATUS FLORIDANUS Ridgway.

#### FLORIDA PILEATED WOODPECKER.

Similar to *P. p. pileatus*, but decidedly blacker (that is, the general black color less slaty or sooty), and average size less, with bill usually relatively shorter and broader.

*Adult male*.—Length (skins), 393-430 (412); wing, 222-235 (226.1); tail, 142.5-156.5 (150.7); culmen, 45-49 (46.5); tarsus, 32-35 (33.6); outer anterior toe, 26-28 (26.9).<sup>a</sup>

<sup>a</sup> Ten specimens.



*Adult female*.—Length (skins), 403–415 (409); wing, 210–222 (220.8); tail, 136–151.5 (145.5); culmen, 41.5–45.5 (43.8); tarsus, 31–34.5 (32.7); outer anterior toe, 23–27 (25.3).<sup>a</sup>

Central and southern Florida (St. Johns River?; Blue Cypress Lake; Shell Hammock; Orange Hammock; Fort Gardner; Lake Arbuckle; Fort Thompson; Fort Bassinger; Fort Myers; Lake Harney; Lake Trafford; Punta Rassa; Kissimmee; Tarpon Springs; Avon Park; Miami River; Osceola County; Polk County; Hernando County; Orange County).

*Picus pileatus* (not of Linnæus) AUDUBON, Orn. Biog., ii, 1834, 74, part; v, 1839, 533, part; Synopsis, 1839, 176, part; Birds Am., oct. ed., iv, 1842, 226, part.

*Hylatomus pileatus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 107, part (St. Johns R., Florida); Cat. N. Am. Birds, 1859, no. 90, part.—TAYLOR, Ibis, 1862, 128 (Florida).—MAYNARD, Birds E. N. Am., 1879, 234, part (Florida).

[*Hylatomus*] *pileatus* COUES, Key N. Am. Birds, 1872, 192, part (Florida).

*Hylatomus pileatus* ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 302 (c. Florida; crit.).—COUES, Check List, 1873, no. 294, part; 2d ed., 1882, no. 432, part; Birds North West, 1874, 278, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 550, part (Florida).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, part; Nom. N. Am. Birds, 1881, no. 371, part.

[*Hylatomus*] *pileatus* COUES, Key N. Am. Birds, 2d ed., 1884, 480, part.

*Ceophlæus pileatus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 405, part.—SCOTT, Auk, vi, 1889, 251 (Tarpon Springs and Punta Rossa, Florida).—MORTIMER, Auk, vii, 1890, 339 (Orange Co., Florida; habits).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 102, part, pl. 1, fig. 5 (Florida).

[*Ceophlæus*] *pileatus* RIDGWAY, Man. N. Am. Birds, 1887, 289, part.

*Ceophloeus pileatus pileatus* BANGS, Auk, xv, April, 1898, 176, in text (Ft. Myers, Florida).

*Dryotomus pileatus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 515, part (Hernando Co. and Tarpon Springs, Florida).

[*Dryotomus*] *pileatus* SHARPE, Hand-list, ii, 1900, 232, part.

*Phlæotomus pileatus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 374, part.

*Phlæotomus pileatus pileatus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 192, part.

*Phlæotomus pileatus floridanus* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 33 (Prevatt's Camp, 24 miles s. w. of Kissimmee, Florida; coll. U. S. Nat. Mus.).

### PHLÆOTOMUS PILEATUS ABIETICOLA (Bangs).

#### NORTHERN PILEATED WOODPECKER.

Similar to *P. p. pileatus*, but much larger, bill relatively longer, and general coloration lighter (more slaty).

*Adult male*.—Length (skins), 402–452 (429); wing, 237–253 (243.3); tail, 151–174 (161.8); culmen, 55.5–60 (58); tarsus, 33–36 (34.7); outer anterior toe, 24–28 (27.2).<sup>b</sup>

<sup>a</sup> Ten specimens.

<sup>b</sup> Eleven specimens.

*Adult female*.—Length (skins), 435;<sup>a</sup> wing, 232–243 (236.7); tail, 154.5–162.5 (159.2); culmen, 50.5–53 (52); tarsus, 33.5–35.5 (34.3); outer anterior toe, 25–27 (25.8).<sup>b</sup>

Northern Upper Austral, Transition, and Canadian zone forests of eastern North America, from West Virginia (Rocco), western Pennsylvania (Erie; Lake Pleasant; Clinton County), New York, New England, Wisconsin (Menomonie), Minnesota (St. Cloud; Moores Lake), etc., north to New Brunswick (Great Falls; Fort Fairfield), Nova Scotia, Keewatin (Sturgeon Lake; Nelson River), Mackenzie (Big Island, Great Slave Lake; Fort Liard), etc.; probably south through southern Alleghenies and over northern Ohio, Indiana, Illinois, etc., and west to base of Rocky Mountains.

*Picus pileatus* (not of Linnæus) WILSON, Am. Orn., iv, 1811, 27, part, pl. 29, fig. 1 (by error fig. 2 on plate).—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826 (Synop. Birds U. S.), 44, part.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 567, part; 2d ed., 1840, 671, part.—AUDUBON, Orn. Biog., ii, 1834, 74, part; v, 1839, 533, part; Synopsis, 1839, 176, part; Birds Am., oct. ed., iv, 1842, 226, part.—WILLIS, An. Rep. Smithson. Inst. for 1858 (1859), 284 (Nova Scotia).—SUNDEVALL, Consp. Av. Picin., 1866, 8, part.

*P[icus] pileatus* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 368, part; Obs. Wilson's Am. Orn., 1826, [28], part.

*Picus (Dryotomus) pileatus* SWAINSON, Fauna Bor.-Am., ii, 1831, 304.

*Dryocopus pileatus* BARRY, Proc. Bost. Soc. N. H., 1854, 8 (Wisconsin).

*D[ryocopus] pileatus* RIDGWAY Ann. Lyc. N. Y., x, 1874, 377, part (Illinois).

*Hylotomus pileatus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 107, part; Cat. N. Am. Birds, 1859, no. 90, part.—BLAKISTON, Ibis, 1862, 3 (n. branch of Saskatchewan R.).—VERRILL, Proc. Essex Inst., 1862, 144 (Oxford Co., Maine).—MERRIAM, Bull. Nutt. Orn. Club, iv, 1879, 6 (Lewis Co., n. e. New York).—MAYNARD, Birds E. N. Am., 1879, 234, part, pl. 19, figs. 1–4.

*Hylotomus pileatus* BLAKISTON, Ibis, 1863, 52 (Sturgeon Lake, Keewatin).—McILWRAITH, Bull. Essex Inst., 1866, 83 (Hamilton, Ontario).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 291 (Hoboken, New Jersey).—COUES, Check List, 1873, no. 294, part; 2d ed., 1882, no. 432, part; Birds North West, 1874, 278, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 551, part, pl. 56, figs. 4, 5.—BREWSTER, Ann. Lyc. N. Y., xi, 1875, 144 (Ritchie Co., West Virginia).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, part; Nom. N. Am. Birds, 1881, no. 371, part.—KNOWLTON, Bull. Nutt. Orn. Club, vii, 1882, 63 (Brandon, Vermont).—BATCHELDER, Bull. Nutt. Orn. Club, vii, 1882, 150 (Grand Falls and Ft. Fairfield, New Brunswick; Houlton, Maine).—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 236 (Point de Monts, Quebec).—BRACKETT, Quart. Journ. Bost. Zool. Soc., iii, 1884, 17 (near Boston, Massachusetts).—AGERSBORG, Auk, ii, 1885, 283 (s. e. South Dakota).

[*Hylotomus*] *pileatus* COUES, Key N. Am. Birds, 1872, 192, part.

*Hylotomus* *pileatus* COUES, Key N. Am. Birds, 2d ed., 1884, 480, part.

*Ceophlæus pileatus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 405, part.—NORTON, Auk, v, 1888, 111 (Franklin Co., Massachusetts).—BREWSTER, Auk, v, 1888, 390 (Winchendon, Massachusetts, resident).—RIDGWAY, Orn. Illinois, i, 1889, 382, part.—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 550 (Manitoba, resident).—SAGE, Auk,

<sup>a</sup> One specimen.

<sup>b</sup> Three specimens.

- xii, 1895, 311 (Granby, Connecticut, winter of 1894-95).—PIERS, Trans. Nova Scotia Inst. Sci., ser. 2, i, 1895, 404 (Nova Scotia, rare resident).—(?)COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 84 (Colorado; resident, rare).—FLEMING, Auk, xviii, 1901, 39 (Parry Sound and Muskoka, n. w. Ontario).—HOWE, Contr. Am. Orn., ii, 1902, 15 (Vermont).—COX, Auk, xix, 1902, 288 (Minnesota; habits, etc.).
- C[cephalæus] pileatus* RIDGWAY, Man. N. Am. Birds, 1887, 289, part.
- Dryotomus pileatus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 515, part (Maine; Herkimer Co., Big Otter Lake, Big Moose Lake, and Watson, New York; West Virginia).
- Ceophlæus pileatus abieticola* BANGS, Auk, xv, April, 1898, 176 (Greenville, Maine; coll. E. A. and O. Bangs).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xvi, 1899, 110.—HOWELL, Auk, xviii, 1901, 340 (Mt. Mansfield, Vermont).—BRIDGE, Auk, xxi, 1905, 414 (Graylock Mt., Massachusetts).—TAVERNER and SWALES, Wilson Bull., no. 61, 1907, 134 (Point Pelee, Ontario; extirpated some 30 years previously!).—ROBERTS, in Wilcox's Hist. Becker Co., Minn., 1907, 176 (common).
- Phlæotomus pileatus abieticola* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 374, part; Check List, 3d ed., 1910, 192, part.—PREBLE, North Am. Fauna, no. 27, 1908, 385 (Athabasca and Slave rivers and along Rocky Mts. at least to Liards River).—RIDGWAY, Proc. Biol. Soc. Wash., xxiv, 1911, 33 (geog. range).—THAYER, Auk, xxviii, 1911, 266 (Harvard, Massachusetts, Oct. 15, 1910).
- [*Dryotomus*] *abieticola* SHARPE, Hand-list, ii, 1900, 232, part.

### PHLÆOTOMUS PILEATUS PICINUS Bangs.

#### WESTERN PILEATED WOODPECKER.

Similar to *P. p. abieticola*, but averaging slightly smaller, and general coloration decidedly darker (less slaty); white tips to longer primaries usually less distinct, often obsolete or sometimes altogether wanting; throat usually streaked or suffused with gray, sometimes with a broad, median, uniform stripe of this color; white on basal portion of remiges more restricted. (Much larger than *P. p. pileatus* or *P. p. floridanus*, and with the black more sooty than in the latter.)

*Adult male*.—Length (skins), 400-450 (426); wing, 230-247 (237); tail, 147-163 (157.2); culmen, 52-58.5 (54.4); tarsus, 32.5-36 (34.4); outer anterior toe, 25-28 (26.5).<sup>a</sup>

*Adult female*.—Length (skins), 390-434 (407); wing, 226-235 (228.1); tail, 146-158 (151.7); culmen, 47-50.5 (48.7); tarsus, 32.5-35 (33.9); outer anterior toe, 23.5-27 (25.6).<sup>b</sup>

Forests of the humid northwest coast district from British Columbia (Victoria; Comox; Port Moody; near Babine; Departure Bay; Sicamous; Beecher Bay; Sumas; Esquimault; Mount Lehman) and southward through Washington, Oregon, and California to Mendocino County on coast and southern Sierra Nevada in the interior (Sequoia National Park; Kings River Canyon; Merced River, etc.);

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Eight specimens.



east to Idaho (Sawtooth and Salmon River Mountains) and western Montana (Powell Co.; Flathead Lake).

*Picus pileatus* (not of Linnæus) AUDUBON, Orn. Biog., ii, 1834, 74, part (Columbia R.); v, 1839, 533, part (Columbia R.); Synopsis, 1839, 176, part (Columbia R.); Birds Am., oct. ed., iv, 1842, 226, part (Columbia R.).—SUNDEVALL, Conspect. Av. Picin., 1866, 8, part.

*Dryocopus pileatus* BRIDGES, Proc. Zool. Soc. Lond., 1858, 2 (Scotts Mts., Trinity Co., and Sierra Nevada, 4,000 ft., California).

*Hylatomus pileatus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 107, part (Columbia R.; Ft. Steilacoom, Washington); Cat. N. Am. Birds, 1859, no. 90, part.—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 161 (Whitby I., Ft. Steilacoom, etc., Washington).—LORD, Proc. Roy. Artill. Inst. Woolwich, iv, 1864, 212 (Brit. Columbia).—BROWN, Ibis, 1868, 419 (Vancouver I.).

*Hylatomus pileatus* SCLATER, Proc. Zool. Soc. Lond., 1859, 236 (Vancouver I.).—COOPER, Orn. Calif., 1870, 396.—COUES, Check List, 1873, no. 294, part; 2d ed., 1882, no. 432, part; Birds North West, 1874, 278, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 551, part.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1876, 26 (Sierra Nevada, s. to lat. 37°).—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 130 (Camp Harney, s. e. Oregon).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 429 (Big Trees, Calaveras Co., California).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, part; Nom. N. Am. Birds, 1881, no. 371, part.—SALVIN, Proc. Zool. Soc. Lond., 1883, 425 (Esquimaux, Brit. Columbia).

[*Hylatomus*] *pileatus* COUES, Key N. Am. Birds, 1872, 192, part.

[*Hylatomus*] *pileatus* HENSHAW, Ann. Rep. U. S. Geol. Surv. W. 100th Merid., 1879, 312 (Cascades of the Columbia R.).—COUES, Key N. Am. Birds, 2d ed., 1884, 480, part.

*Ceophlæus pileatus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 405, part.—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 206 (McCloud R., base of Mt. Shasta, and coast redwoods, California).—BENDIRE, Auk, v, 1888, 240 (Ft. Klamath, Oregon, breeding); Life Hist. N. Am. Birds, ii, 1895, 102, part.—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 139 (Westminster, Mt. Lehman, and Vancouver I., Brit. Columbia; crit.).—FANNIN, Check List Birds Brit. Col., 1891, 28 (common, especially near coast).—MERRIAM, North Am. Fauna, no. 5, 1891, 97 (Salmon R. Mts. and Mt. Idaho, Idaho).—LAWRENCE (R. H.), Auk, ix, 1892, 355 (Grays Harbor, Washington).—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 49 (Mariposa Grove, Merced R., Sequoia National Park, and Kings R. Canyon, California).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1893, 43 (Brit. Columbia).—DAWSON, Auk, xiv, 1897, 175 (Okanogan Co., Washington).—SILLOWAY, Bull. Univ. Mont., no. 3, 1901, 51 (Flathead Lake, etc., Montana; habits).

[*Ceophlæus*] *pileatus* RIDGWAY, Man. N. Am. Birds, 1887, 289, part.

*Dryotomus pileatus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 515, part (Esquimaux, Brit. Columbia; Hollisters and Nevada, California).

*Ceophlæus pileatus abieticola* (not of Bangs) MERRIAM, North Am. Fauna, no. 16, 1899, 116 (Mt. Shasta, California).—(?) COOKE, Bull. 56, Col. Agric. Exp. Sta., 1900, 207 (Colorado).—GRINNELL, Pacific Coast Avifauna, no. 3, 1902, 38 (California range).—ANDERSON and GRINNELL, Proc. Ac. Nat. Sci. Phila., 1903, 8 (Siskiyou Mts., n. California; measurements).—STONE, Proc. Ac.

Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, Mendocino Co., California; measurements; crit.).—BOWLES, Auk, xxiii, 1906, 144 (Tacoma, Washington, breeding).

*Phlæotomus pileatus abieticola* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 374, part; Check List, 3d ed., 1910, 192, part.—KELLOGG, Condor, xiii, 1911, 119 (Trinity Co., California).—GRINNELL (J.), Pacific Coast Avifauna, no. 8, 1912, 15.—SAUNDERS, Condor, xiv, 1912, 26 (Powell Co., s. w. Montana).—SWARTH, Univ. Calif. Pub. Zool., x, 1912, 38 (Parkville, Errington, French Creek, Little Qualicum R., Alberni, and Central Lake, Vancouver I.; crit.).—JEWETT, Condor, xiv, 1912, 192 (Sawtooth Mts., Idaho).

[*Dryotomus*] *abieticola* SHARPE, Hand-list, ii, 1900, 232, part.

*Phlæotomus pileatus picinus* BANGS, Proc. New Engl. Zool. Soc., iv, April 2, 1910, 79 (Sumas, British Columbia; coll. Mus. Comp. Zool.).—RIDGWAY, Proc. Biol. Soc. Wash., xxiv, 1911, 34 (geog. range).

### Genus CAMPEPHILUS Gray.

*Campephilus* GRAY, List Gen. Birds, 1840, 54. (Type, by original designation, *Picus principalis* Linnæus.)

*Campophilus* (emendation) CABANIS and HEINE, Mus. Hein., iv, heft 2, July, 1863, 100.

*Megapicus* (not of Malherbe, Bull. Soc. Hist. Nat. Moselle, 5<sup>e</sup> cahier, 1848-1849, 17) MALHERBE, Mém. Acad. Metz, xxx, 1849, 317. (Type, *Picus imperialis* Gould?)<sup>a</sup>

*Megapicus* (emendation) BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 7).

Very large Picidæ<sup>b</sup> (wing 230-320 mm.) with outer hind toe much longer than outer front toe, bill longer than head, with gonys nearly four times as long as mandibular rami, head with a very conspicuous occipito-nuchal, more or less recurved, crest (bright red in males, glossy black and more strongly recurved in females), the general color uniform glossy blue-black relieved by white secondaries and under wing-coverts, and a white stripe along each side of interscapular area (a white stripe down side of neck in two species), the bill ivory white or yellowish.

Bill longer than head, broadly chisel-shaped at tip, much broader than deep at anterior end of nostrils, abruptly contracted terminally in vertical profile; culmen very strongly ridged, straight or very faintly convex; gonys strongly ridged, nearly four times as long as mandibular rami, straight terminally, very faintly convex basally; supranasal ridge and prenasal groove very distinct, parallel with culmen, running to (or near to) edge of maxilla at a point about

<sup>a</sup> The species mentioned are, in the sequence given: 1. *M. imperialis* (Gould); 2. *M. principalis* (Linnæus); 3. *M. malherbii* (Gray); 4. *M. albirostris* (Vieillot)=*Picus melanoleucus* Gmelin, and 5. *M. validus* (Temminck)=*Chrysocolaptes validus*. Of these only nos. 1 and 2 belong to *Campephilus*, nos. 3 and 4 belonging to the genus *Scapanus*.

<sup>b</sup> This genus contains much the largest of known woodpeckers.

one-fifth the distance from tip to base of tomium. Nostril longitudinally elliptical, situated about midway between culmen and tomium, covered by a distinct tuft of antrorse prefrontal hair-like feathers. Feathers of malar apex antrorse, forming a conspicuous, closely appressed, pointed tuft, those of the chin also antrorse, forming a broad flattened tuft covering lower base of mandible. Orbits partly naked, but margin of eyelids feathered, especially posterior portion of the lower. Wing moderate, with relatively short secondaries, the longest primaries exceeding distal secondaries by about one-third the length of wing; sixth, seventh, and eighth primaries longest, the ninth intermediate between third and fourth, the tenth (outermost) nearly half as long as ninth, very narrow, subfalcate. Tail about three-fifths as long as wing; four middle rectrices subequal (the middle pair slightly longer than the next), very narrow their entire length, with both webs of middle pair and inner web of next pair strongly deflected (folded downward), except terminally, the shaft very large and strong, broadly and deeply grooved along under side, bent upward near middle portion, then bent downward (decurved) terminally. Tarsus longer than outer hind toe without claw, the latter much longer than outer anterior toe with claw; all the claws extremely large and strongly curved, that of the hallux, however, distinctly smaller than the rest.

*Coloration*.—General color glossy blue-black, the secondaries, tip of inner (proximal) primaries, under wing-coverts, and stripe along each side of interscapular area (in two species also a broad white stripe along side of neck, and the postnasal tufts) white; adult male with the very conspicuous, compressed, pointed, and slightly recurved occipito-nuchal crest bright red, adult females with the crest glossy blue-black and more distinctly (sometimes conspicuously) recurved; bill ivory white or yellowish.

*Range*.—Southeastern United States, Cuba, and north-central Mexico. (Three species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF CAMPEPHILUS.

- a. Nasal tufts black; no white stripe on head or neck; larger (wing 292–320, culmen 72.5–85.5). (North-central Mexico.)..... *Campephilus imperialis* (p. 166).
- aa. Nasal tufts and a stripe along side of head and neck white; smaller (wing 236–263, culmen 58–72.5).
  - b. Larger (wing 240–263, culmen 61–72.5); white stripe on side of head not extending to near rictus; nasal tufts much larger. (Southeastern United States; formerly to southern Virginia, lower Ohio Valley, southeastern Missouri, etc., now extirpated over by far the greater portion of its former range.)  
*Campephilus principalis* (p. 167).
  - bb. Smaller (wing 236–255, culmen 58–61); white stripe on side of head continued nearly if not quite to rictus; nasal tufts smaller. (Cuba.)  
*Campephilus bairdii* (p. 169).



## CAMPEPHILUS IMPERIALIS (Gould).

## IMPERIAL WOODPECKER.

*Adult male*.—General color glossy blue-black, the tail and primaries (except terminal portion of five or six innermost) dull black or brownish black; outer margin of interscapular region white, forming a conspicuous V-shaped mark; secondaries (except basal portion, mostly concealed), terminal portion (extensively) of primaries (except five outer ones), under wing-coverts, and axillars, white; crest, except on crown, bright red (poppy red to scarlet-vermilion), this red color extending forward laterally to above posterior angle or even middle of eye; bill pale grayish yellow or dull ivory white; iris bright yellow; legs and feet dusky grayish horn color in dried skins (more bluish gray in life?); length (skins), 535–580 (563); wing, 303–320 (310.9); tail, 184–202 (194.5); culmen, 79–85.5 (82.9); tarsus, 48–51 (49.2); outer anterior toe, 36–37.5 (36.9).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crest wholly glossy blue-black and much more strongly recurved; length (skins), 560–570 (564); wing, 292–320 (307.4); tail, 183–210.5 (194.6); culmen, 72.5–81.5 (77.8); tarsus, 45.5–50.5 (47.7); outer anterior toe, 36–37.5 (36.7).<sup>a</sup>

Northwestern Mexico, in States of Sonora (Rio Bavispe; Sierra Madre; 50 miles south of Arizona boundary), Chihuahua (Pacheco; Colonia García; Mound Valley; Babicora; Rancheria de los Apaches; Chuhuichupa; 50 miles west of Terrazas), Durango (El Salto; Los Coyotes; Ciudad Durango), Zacatecas, Jalisco (near Bolaños; Sierra de Valparaiso; Sierra de Juanacatlán), and Michoacán (Nahuatzin; Patzcuaro).

*Picus imperialis* GOULD, Proc. Zool. Soc. Lond., ii, 1832, 140 ("California," i. e., near Bolaños, Jalisco, Mexico; <sup>b</sup> coll. J. Gould).—LESSON, Compl. Buffon, ix, 1837, 317.—AUDUBON, Orn. Biog., v, 1839, 313; Synopsis, 1839, 175; Birds Am., oct. ed., iv, 1842, 212.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 667.—SUNDEVALL, Consp. Av. Picin., 1866, 4.

*C[ampephilus] imperialis* GRAY, Gen. Birds, ii, 1845, 436.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 390, pl. 646, fig. 4314.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 495, in text, 496.—RIDGWAY, Man. N. Am. Birds, 1887, 281.

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<sup>a</sup> Ten specimens.

<sup>b</sup> The types were supposed to have come "from that little explored district of California which borders the territory of Mexico;" but according to Salvin and Godman (Biol. Centr.-Am., Aves, ii, 1895, 445) they were probably collected by "the mining engineer Flores, who formed a considerable collection of humming-birds, and also preserved skins of a few other species, all of which passed into Gould's possession," in the neighborhood of Bolaños, in the Sierra Madre of Jalisco, where the species is known to occur, and where Flores was for a time stationed.

- Campephilus imperialis* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxvii, 82 (Mexico); Cat. N. Am. Birds, 1859, no. 73.—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 53.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 236; Auk, iv, 1887, 161 (n. Sonora, 50 m. from Arizona boundary).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 35 (Chuhuichupa and Rancheria de los Apaches, n. w. Chihuahua; Bavispe R., n. e. Sonora).—NELSON, Auk, xv, 1898, 217, pl. 3 (near Patzcuaro, Michoacan; Jalisco; Zacatecas; Durango; biography).—SMITH (A. P.), Condor, x, 1908, 91 (w.-centr. Chihuahua, 50 m. w. of Terrazas).
- [*Campephilus*] *imperialis* GRAY, Hand-list, ii, 1870, 187, no. 8621.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 98.
- C[*ampophilus*] *imperialis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 101.
- Campophilus imperialis* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 465 (Ciudad Durango, Durango).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 444 (Sierra Madre, Sonora; Ciudad Durango; Sierra de Valparaiso and Sierra de Juanacatlan, Jalisco).
- [*Campophilus*] *imperialis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 216.—SHARPE, Hand-list, ii, 1900, 228.
- [*Dryocopus*] *imperialis* BONAPARTE, Consp. Av., i, 1850, 132.
- Dryotomus imperialis* CASSIN, Illustr. Birds Calif., Tex., etc., 1855, 285, pl. 49.
- [*Megapicus*] *imperialis* BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 7).
- Megapicus imperialis* MALHERBE, Mon. Pict., i, 1861, 2; iii, 1862, pl. 1, figs. 1, 2, 3.

### CAMPEPHILUS PRINCIPALIS (Linnæus).

#### IVORY-BILLED WOODPECKER.

Similar to *C. imperialis* but much smaller and with nasal tufts and a stripe from suborbital region down side of neck white.

*Adult male*.—General color glossy blue-black, the primaries and tail duller black, or with bluish gloss less distinct; nasal plumes, anterior portion of lores, stripe on sides of head and neck (commencing usually beneath middle of eye and much narrower on this anterior portion) white, these stripes continued posteriorly along each edge of interscapular region; secondaries (except basal portion), terminal portion of primaries (extensively), except five or six outermost, and under wing-coverts, white; sometimes a few feathers on flanks and anal region tipped with white; occipital crest bright red; bill ivory white in life, deepening in very old skins to brownish yellow or ochraceous-buff; iris clear lemon yellow; legs and feet (in life) light gray, the larger scutella paler and somewhat yellowish gray, the claws horn gray or pale horn color; length (skins), 420–493 (454); wing, 240–263 (255.8); tail, 147–160.5 (154.4); culmen, 63–72.5 (68.2); tarsus, 42.5–46 (44.2); outer anterior toe, 30–34 (32.1).<sup>a</sup>

*Adult female*.—Similar in coloration to the adult male, but crest wholly glossy blue-black; length (skins), 452–488 (471); wing, 240–

<sup>a</sup> Fifteen specimens.

262 (256.4); tail, 151-166 (159.5); culmen, 61-67.5 (64.3); tarsus, 40.5-44 (42.6); outer anterior toe, 30-33.5 (31.7).<sup>a</sup>

Formerly Lower Austral zone of eastern United States, north to coast district of North Carolina and in the Mississippi Valley to southern Indiana (Franklin County, up to 1826), southern Illinois (White County, up to about 1857), Missouri (Kansas City; Fayette), Oklahoma, Indian Territory (Caddo), western Kentucky (Fulton County, 1884), Arkansas (Newport), etc., west to Texas (Brazos and Trinity rivers; Tarkington; Harris County; Montgomery County), south to the Gulf coast, and in Florida to the Big Cypress district south of Caloosahatchie River. Now extirpated over much the greater portion of its former range and existing only in scattered or isolated localities in the lower Mississippi Valley and Gulf States, chiefly (?) in Florida.

[*Picus*] *principalis* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 113 (based on *The Largest White-billed Woodpecker* Catesby, Nat. Hist. Carolina, i, 16); ed. 12, i, 1766, 173.—GMELIN, Syst. Nat., i, pt. i, 1788, 425.—LATHAM, Index Orn., i, 1790, 225.

*Picus principalis* BODDAERT, Tabl. Pl. Enl., 1783, 43.—TEMMINCK, Cat. Syst., 1807, 61.—VIEILLOT, Ois. Am., Sept., ii, 1807, 56, pl. 109; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 76.—WILSON, Am. Orn., iv, 1811, 20, pl. 29, fig. 1.—STEPHENS, Shaw's Gen. Zool., ix, 1815, 150, pl. 30.—VALENCIENNES, Dict. Sci. Nat., xl, 1826, 177.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, (Synop. Birds U. S.), 1826, 44.—DRAPIEZ, Dict. Class., xiii, 1828, 495.—LESSON, Traité d'Orn., i, 1831, 229.—SWAINSON, Fauna Bor.-Am., ii, 1831, 301; Classif. Birds, ii, 1837, 306.—AUDUBON, Orn. Biog., i, 1831, 341, pl. 66; v, 1839, 535; Synopsis, 1839, 175; Birds Am., oct. ed., iv, 1842, 214, pl. 256.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 564; 2d ed., 1840, 668.—SUNDEVALL, Consp. Av. Picin., 1866, 4.

*P[icus] principalis* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1307.—BONAPARTE, Journ. Ac. Sci. Phila., iii, pt. ii, 1824, 367; Obs. Wilson's Am. Orn., 1826, [28].—WAGLER, Syst. Av., 1827, *Picus*, sp. 1.

[*Dryocopus*] *principalis* BOIE, Isis, 1828, 326.—BONAPARTE, Consp. Av., i, 1850, 132.

*Dendrocopus principalis* BONAPARTE, Geog. and Comp. List, 1838, 39.

*C[ampephilus] principalis* GRAY, List Gen. Birds, 1840, 54; ed. 1841, 70; Gen. Birds, ii, 1845, 436.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 390, pl. 646, figs. 4315, 4316.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 377 (s. e. Illinois, about 1857); Bull. Illinois State Labr. N. H., no. 4, 1881, 185 (s. Illinois, formerly); Man. N. Am. Birds, 1887, 281.—COUES, Key N. Am. Birds, 2d ed., 1884, 479.

<sup>a</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from Florida.....	255.6	152.9	68.2	44	32.1
Five adult males from Louisiana (2), Arkansas (1), and Texas (2)	256.2	157.2	68.2	44.2	32.1
FEMALES.					
Ten adult females from Florida.....	255.6	158.8	64.3	42.6	31.7
One adult female from Louisiana.....	264	166.5	64.5	42	31



*Campephilus principalis* GRAY, List Birds Brit. Mus., Picidæ, 1868, 53.—WOODHOUSE, in Rep. Sitgreaves' Exp. Zuñi and Col. R., 1853, 90 (Arkansas R.; e. Texas).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 81; Cat. N. Am. Birds, 1859, no. 72.—TAYLOR, Ibis, 1862, 128 (Florida).—DRESSER, Ibis, 1865, 468 (Brazos and Trinity rivers, Texas).—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 301 (Volusia, Enterprise, and Hawkinsville, e. Florida).—COUES, Check List, 1873, no. 293; 2d ed., 1882, no. 431.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 496, pl. 49, figs. 1, 2.—MERRIAM, Am. Nat., viii, 1874, 88 (St. John and Ocklawaha rivers, e. Florida).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188; Nom. N. Am. Birds, 1881, no. 359; Orn. Illinois, i, 1889, 374 (White Co., Illinois, formerly).—HAY, Bull. Nutt. Orn. Club, vii, 1882, 92 (near Vicksburg and Jackson, Mississippi).—NEHRING, Bull. Nutt. Orn. Club, vii, 1882, 170 (Harris and Montgomery Counties, Texas).—BAILEY (H. B.), Bull. Nutt. Orn. Club, viii, 1883, 40 (Altamaha Swamp, Georgia; descr. nest and eggs).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 392; 3d ed., 1910, 185.—BUTLER, Bull. Brookville Soc. N. H., no. 2, 1886, 25 (Franklin Co., Indiana, up to about 1826); Birds Indiana, 1897, 829.—COOKE, Bird Migr. Miss. Val., 1888, 127 (Kansas City and Fayette, Missouri; Newport, n. e. Arkansas; Caddo, Oklahoma).—SCOTT, Auk, v, 1888, 186 (Tarpon Springs, Florida; descr. nest); vi, 1889, 251 (Punta Rassa, Florida); ix, 1892, 212, 218 (Caloosahatchie R., Florida).—PINDAR, Auk, vi, 1889, 313 (Fulton Co., Kentucky, about 1884).—HASBROUCK, Auk, viii, 1891, 174-186, with map (geog. range).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 42.—BEYER, Auk, xvii, 1900, 97-99 (Franklin Parish, Louisiana; habits, etc.); Proc. Louisiana Soc. Nat. for 1897-99 (1900), 102 (Louisiana, rare).—WAYNE, Auk, xxii, 1905, 414 (Jefferson Co., Florida; descr. spec. with white-tipped primaries); Birds South Car., 1910, 87 (near Beldoc, Barnwell Co., as late as 1898; probably still existing in swamps of Pedee, Santee, and Savannah rivers).—HOTT, Warbler, ser. 2, i, 1905, 52-55, pl. (3) (Lake Co., Florida; breeding habits, etc.).—BEYER, ALLISON, and KOPMAN, Auk, xxv, 1908, 445 (n. Louisiana, common).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 62 (food).

[*Campephilus*] *principalis* GRAY, Hand-list, ii, 1870, 187, no. 8620.—COUES, Key N. Am. Birds, 1872, 192.

[*Campophilus*] *principalis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 100.

[*Campophilus*] *principalis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 216.—SHARPE, Hand-list, ii, 1900, 228.

*Campophilus principalis* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 463 (DeSoto Co., Argo, and Tarpon Springs, Florida), 572 (descr. female nestling).

[*Campephilus principalis*] var. *principalis* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 496.

*Megapicos principalis* MALHERBE, Mém. Acad. Metz, xxx, 1849, 318.

[*Megapicus*] *principalis* BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 7).

*Megapicus principalis* MALHERBE, Mon. Picid., i, 1861, 4; iii, 1862, pl. 1, figs. 4, 5.

### CAMPEPHILUS BAIRDII Cassin.

#### CUBAN IVORY-BILLED WOODPECKER.

Similar to *C. principalis*, but slightly smaller, the bill decidedly so; nasal tufts much smaller, and white stripe on side of head continued nearly to the rictus.

*Adult male*.—Length (skins), 410–451 (430.5); wing, 236–250 (243); tail, 137–154 (145.2); culmen, 59–61 (60); tarsus, 40–42 (41); outer anterior toe, 31.5–33.5 (32.5).<sup>a</sup>

*Adult female*.—Length (skins), 422; wing, 240–255 (247.5); tail, 159.5–165.5 (162.5); culmen, 58–60 (59); tarsus, 41; outer anterior toe, 30.5–31.5 (31).<sup>a</sup>

Island of Cuba (Monte Verde).

*Picus principalis* (not of Linnæus) D'ORBIGNY, in La Sagra's Hist. Fis., etc., Cuba, Aves, 1839, 107; French ed., p. 140.—LEMBEYE, Aves de la Isla de Cuba, 1850, 131.

*Campephilus principalis* (not of Gray) CABANIS, Journ. für Orn., 1856, 102.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 307.—GUNDLACH, Journ. für Orn., 1861, 415 (crit.).

[*Campephilus*] *principalis* GUNDLACH, Journ. für Orn., 1861, 334.

*Campephilus bairdii* CASSIN, Proc. Ac. Nat. Sci. Phila., xv, 1863, 322 (Cuba; coll. Acad. Nat. Sci. Phila.).—GUNDLACH, Repert. Fisico-Nat. Cuba, i, 1866, 293; Journ. für Orn., 1866, 352; 1871, 293; 1874, 148 (habits); Contr. Orn. Cuba, 1876, 113, 273; Orn. Cubana, ed. 1895, 137.—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 53.

[*Campephilus*] *bairdii* GRAY, Hand-list, ii, 1870, 187, no. 8622.

[*Campephilus principalis*] var. *bairdi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 496.

[*Campephilus*] *principalis bairdi* CORY, List Birds West Ind., 1885, 19.

*Campephilus principalis bairdi* CORY, Auk, iii, 1886, 373; Birds West Ind., 1889, 168; Cat. West Ind. Birds, 1892, 12, 104, 128.

[*Campephilus*] *principalis bairdi* RIDGWAY, Man. N. Am. Birds, 1887, 281.

*Campephilus bairdi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 465.

[*Campephilus*] *bairdi* SHARPE, Hand-list, ii, 1900, 228.

*Campephilus bairdi* MAYNARD, Cat. Birds W. I., 1903, 12 (Cuba).

[*Picus*] *bairdi* (not of Malherbe, 1861) GIEBEL, Thes. Orn., iii, 1876, 144, part.

[*Picus principalis*] 2 C. *Varietas s. stirps insularis* SUNDEVALL, Consp. Av. Picin., 1866, 5.

Genus SCAPANEUS Cabanis and Heine.

*Scapaneus* <sup>b</sup> CABANIS and HEINE, Mus. Hein., iv, heft 2, July 6, 1863, 90.  
(Type, *Picus melanoleucus* Gmelin.)

Large Pictidæ (wing about 165–209 mm.) resembling *Campephilus* but differing in relatively much shorter and less depressed bill, with shorter gonys (less than three instead of nearly four times as long as mandibular rami), much longer and broader and non-falcate, tenth primary (decidedly more than half to nearly two-thirds as long as ninth and one-seventh, or more, as broad as long), much less development of feathers on chin, much more extensively (and completely) naked orbital region, and barred (instead of uniform black) under parts.

<sup>a</sup> Two specimens.

<sup>b</sup> “σκαπανεύς (Pionier) entlehnt.” (Cabanis and Heine.)

Bill about as long as head, stout, regularly wedge-shaped in vertical profile, not depressed, its width at anterior end of nostrils but slightly if at all exceeding its depth at same point; culmen straight or but very slightly convex in middle portion, very strongly ridged; gonys less than three times as long as mandibular rami, straight, ascending terminally, slightly prominent and convex basally, distinctly but not sharply ridged; supranasal ridge very distinct, running out to (or toward) tomium at a point anterior to one-third the distance from tip of maxilla to base. Nostril longitudinally oval or ovate, situated much nearer to tomium than to culmen, partly covered by the small antrorse prefrontal feathers, these forming a small but distinct tuft, except in *S. guatemalensis*, in which the feathering surrounding base of bill is shorter, coarser, and more erect; feathers of malar apex and chin (especially the former) antrorse, but without distinct, if any, bristle-like tips. Orbits completely and extensively naked; feathers of occiput developed into a conspicuous obtusely pointed, but not recurved, crest. Wing moderately long, the longer primaries exceeding secondaries by a little more than one-fifth the length of wing; sixth and seventh, or fifth, sixth, and seventh, primaries longest, the ninth equal to second or third, the tenth (outermost) decidedly more than half to nearly two-thirds as long as tenth, at least one-seventh as wide as long, distinctly incurved. Tail a little more than half to about three-fifths as long as wing. Tarsus slightly though decidedly longer than outer hind toe without claw, stout, the planta tarsi covered with small hexagonal scutella (less distinct on inner side); outer hind toe exceeding outer front toe by more than half the length of its terminal phalanx; claws exceedingly large and strongly curved, that of the inner hind toe conspicuously smaller than the rest.

*Coloration*.—Upper parts and chest (whole under parts in *S. leucopogon*) black, the interscapular region with a white stripe along each side (continuous with a white stripe along side of neck) or (in *S. leucopogon*) interscapulars immaculate buff; under parts posterior to chest (except in *S. leucopogon*) barred with black and buff, pale tawny, or white; inner webs of remiges with proximal portion immaculate white or yellow, or (in *S. leucopogon*) with proximal portion of primaries (only) cinnamon-tawny; greater part (sometimes whole) of head red in adult males, partly black in females.

*Range*.—Southern Mexico to southeastern Brazil, Uruguay, Bolivia, and Peru. (Several species.<sup>a</sup>)

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<sup>a</sup> I have not had the opportunity of examining in this connection "*Campephilus*" *rubricollis* (Boddaert) or *C. trachelopyrus* (Malherbe); but *C. guayaquilensis* and *C. melanoleucus* I would refer to *Scapanus*.



## KEY TO THE SPECIES AND SUBSPECIES OF SCAPANEUS.

- a. Bill deep horn color or dusky; nasal plumes and anterior portion of malar region white or dull yellowish; adult male with chin and throat black, adult female with a broad white malar stripe, confluent posteriorly with white stripe on side of neck. (Panamá and Colombia.).....*Scapanus malherbii* (p. 172).
- aa. Bill horny yellowish or dull ivory yellowish; nasal plumes and anterior portion of malar region red; adult male with chin and throat red (like rest of head), adult female without any white malar stripe (the whole head red, except throat, forehead, and median part of crown, which are black). (*Scapanus guatemalensis*.)
  - b. Black portions of plumage more sooty, the chest less extensively black; stripes along sides of back more yellowish; paler bars on under parts deeper brownish buffy and broader; yellow on under side of wings deeper; slightly to much larger.
    - c. Smaller (wing averaging less than 190, culmen averaging less than 48 mm.); black portions of plumage deeper. (Oaxaca, Tabasco, Campeche, and Yucatan to Costa Rica.)...*Scapanus guatemalensis guatemalensis* (p. 174).
    - cc. Larger (wing averaging more than 194, culmen averaging 49 in female, 51.8 in male); black portions of plumage duller. (Eastern Mexico.)  
*Scapanus guatemalensis regius* (p. 178).
  - bb. Black portions of plumage deep black (that of foreneck glossy, slightly bluish), the chest more extensively black; stripes on back purer white (less yellowish); paler bars on under parts narrower, paler; yellow on under side of wings paler; decidedly smaller. (Western and southwestern Mexico.)  
*Scapanus guatemalensis nelsoni* (p. 178).

## SCAPANEUS MALHERBII (Gray).

## MALHERBE'S WOODPECKER.

*Adult male*.—Nasal tufts and adjacent portion of lores, and large spot on anterior portion of malar region, pale straw color or dull yellowish white; an elongated white spot on lower portion of auricular region, with a black one immediately above it; rest of head, except chin and throat, bright poppy red or vermilion; chin, throat, and chest, hindneck, back, scapulars, and wing-coverts, uniform black; rump, upper tail-coverts, tail, and inner secondaries (tertials) rather duller black; primaries sooty black, or very dark sooty brown, their outer webs more brownish, those of the longer quills usually tipped with paler (sometimes whitish); a conspicuous white stripe commencing at upper extremity of neck, on each side, and extending thence downward and backward to posterior extremity of interscapular region, along each side of the latter; under parts of body, together with under tail-coverts, pale tawny, cinnamon-buff, or clay color, broadly barred with black, the bars of the two colors nearly equal in width; under wing-coverts and basal half (approximately) of inner webs of remiges yellowish white or pale primrose yellow; bill blackish horn color or dusky; iris yellow; legs and feet (in dried skins) grayish dusky, in life bluish green or olive, soles yellowish; length (skins), 312–344 (333); wing, 179.5–195 (187.3); tail, 101.5–120

(110.2); culmen, 41.5–51.5 (46.1); tarsus, 32–36 (34.1); outer anterior toe, 23.5–27 (24.6).<sup>a</sup>

*Adult female*.—Similar to the adult male but whole forehead and median upper portion of crest black, and the white neck-stripe continued across entire length of head, occupying the whole of malar region, where tinged, more or less, with yellowish anteriorly; length (skins), 315–350 (332); wing, 171–200 (186.9); tail, 100–121 (112.1); exposed culmen, 38.5–48 (44.1); tarsus, 30–34.5 (32.9); outer anterior toe, 21–26.5 (23.8).<sup>b</sup>

Panamá (Santa Fe de Verágua; Cordillera de Tolé; Calovévora; Panamá; Punta de Sabana; Colón), Colombia (Concordia and Remedios, Antioquía; Atánques, 4,000 feet, Sierra Nevada, 4,000 feet, Valparaiso, El Libano, Bonda, Chirua, Santa Marta, and La Concepción, Santa Marta; near Honda, Tolima; Bogotá; Cauca; Naranjo; Cartagena; Turbo), and Venezuela (Mérida; La Paz; San Estéban; Encontrados, Zulia; San Julián).

*Campephilus malherbii* GRAY, Gen. Birds, ii, Sept., 1845, pl. 108; List Birds Brit. Mus., Picidæ, 1868, 54.—SCLATER, Cat. Am. Birds, 1862, 331 (Bogotá, Colombia).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 366 (Lion Hill, Panama); 1868, 629 (San Esteban, Venezuela); 1875, 235 (Mérida, Venezuela); 1879, 532 (Cauca, Concordia, and Remedios, Colombia).—SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (Santiago de Veragua and Cordillera de Tolé, w. Panama); 1870, 212 (Calovevora, w. Panama).—SALVIN and GODMAN, Ibis, 1879, 205 (Atanques, Santa Marta, Colombia, 4,000 ft.).—BANGS, Proc. Biol.

<sup>a</sup> Nineteen specimens.<sup>b</sup> Sixteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Three adult males from Panama.....	184.2	111.5	43	33.5	25
Ten adult males from Santa Marta district, Colombia.....	185.4	108.3	45.7	34.1	24.3
Four adult males from central Colombia (Bogotá, 3, near Honda, 1).....	192.3	114	48.4	35.5	24.7
Two adult males from Venezuela.....	191.5	109	48	33	25.3
FEMALES.					
Two adult females from Panama.....	187.3	110.8	41	33.3	25.3
Seven adult females from Santa Marta district, Colombia.....	186.5	111.3	45.3	33.5	24.4
Three adult females from central Colombia (Bogotá, 2, near Honda, 1).....	184.3	113.5	44.7	33.3	23.5
Four adult females from Venezuela.....	189.4	113.5	43.6	31.9	22.5

Notwithstanding the considerably smaller average size of specimens from eastern Panama and northeastern Colombia, there is so much individual variation in this respect from all localities that I am not disposed to subdivide the species on the basis of measurements. The series examined from Panama is very small, however, and a larger number of specimens may render a separation desirable. The type locality of the species being unknown, an examination of the type specimen will be necessary in order to determine to which form the name *malherbii* should be restricted.

- Soc. Wash., xii, 1898, 134 (Santa Marta, Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 137 (Bonda, Valparaiso, and El Libano, Santa Marta).—ROBINSON and RICHMOND, Proc. U. S. Nat. Mus., xxiv, 1901, 171 (San Julian, Venezuela).
- [*Campephilus malherbii* GRAY, Gen. Birds, ii, Sept., 1845, 436.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 392, pl. 648, figs. 4323, 4324.
- [*Campephilus malherbii* GRAY, Hand-list, ii, 1870, 187, no. 8623.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 98.
- Campephilus malherbi* WYATT, Ibis, 1871, 380 (Naranjo, Colombia; habits).
- Campophilus malherbii* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 472 (Cordillera de Tolé, Santiago de Veragua, and Lion Hill, Panama; Cartagena, Bogotá, Cauca, and Atanques, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 448.
- Campophilus malherbei* SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Punta de Sabana, Panama).
- [*Campophilus malherbei* SHARPE, Hand-list, ii, 1900, 229.
- Megapicos malherbii* MALHERBE, Mém. Acad. Metz, xxx, 1849, 319.
- Megapicus malherbii* MALHERBE, Bull. Soc. Hist. Nat. Metz, 1849, 17; Mon. Picid., i, 1861, 15; iii, 1862, pl. 6, figs. 1, 2, 4.
- [*Dryotomus malherbi* BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 7).
- [*Scapaneus malherbei* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 93 (Colombia).
- [*Scapaneus malherbei* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (Colombia).
- Dryocopus malherbii* CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 137 (Turbo, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 299 (Lion Hill, Panama).
- Picus malherbei* SUNDEVALL, Consp. Av. Picin., 1866, 5.
- Picus anais* LESSON, Descr. Mam. et Ois., 1847, 203.
- [*Dryocopus pollens* (not *Picus pollens* Bonaparte, 1845) BONAPARTE, Consp. Av., i, 1850, 133, part (Bogota).
- Dryotomus verreauxi* BONAPARTE, Notes Orn. Coll. Delattre, 1854, 85, footnote (Santa Marta, Colombia).

### SCAPANEUS GUATEMALENSIS GUATEMALENSIS (Hartlaub).

#### GUATEMALAN IVORY-BILLED WOODPECKER.

*Adult male*.—Head, all round (including occipital crest), entirely bright red (poppy red to crimson), except a small and sometimes indistinct auricular spot (directly over auricular orifice) of grayish brown or olive; upper parts plain sooty black passing into sooty brown on remiges, the outer webs of primaries much lighter grayish brown, the inner (proximal) primaries indistinctly tipped with dull whitish; a stripe of yellowish white or buffy white originating near upper end of side of neck, extending along side of neck and thence along edge of interscapular region, the two of opposite sides converging on lower back; foreneck and upper chest plain sooty black, more sooty posteriorly; rest of under parts light buff or cream-buff, broadly and very regularly barred with sooty black; axillars, under wing-coverts, and basal half (approximately) of inner webs of remiges immaculate buff-yellow or maize yellow; under surface of lateral rectrices yellowish olive; bill dull yellowish white or horn white;



iris light yellow; legs and feet grayish; length (skins), 305–345 (323); wing, 177–201 (189.6); tail, 95–112.5 (103.7); culmen, 44–50.5 (47.5); tarsus, 31–36 (33.3); outer anterior toe, 22–28.5 (24.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but forehead, crown, and upper median portion of crest, together with chin and throat, uniform black (instead of red, like rest of head); length (skins), 280–340 (312); wing, 173–203 (186.7); tail, 90–113.5 (102.4); exposed culmen, 38.5–49 (45); tarsus, 31–36.5 (34.6); outer anterior toe, 21.5–26.5 (24.2).<sup>b</sup>

*Young male*.—Similar to the adult female, but forehead and median portion of crown duller black or sooty black, chin and throat dark sooty slate or dark grayish brown, nasal tufts, chin, lores, and malar

<sup>a</sup> Thirty-four specimens.<sup>b</sup> Twenty-seven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males ( <i>S. g. regius</i> ) from Vera Cruz (6) and Tamaulipas (4).....	194.6	106.6	51.8	36	26.7
Ten adult males ( <i>S. g. nelsoni</i> ) from Guerrero (6), Michoacan (1), Colima (1), and Sinaloa (1).....	176.6	98	45	32.3	23.6
One adult male from Yucatan.....	184	103	45.5	31	23
Three adult males from Chiapas.....	191	107.5	48.8	34	25.8
Seven adult males from Guatemala.....	188.6	105.6	48.4	34.4	24.3
Two adult males from British Honduras.....	185	107.5	47.8	33	24.8
Three adult males from southern Honduras.....	186.9	102.1	45.9	33.9	24.1
Six adult males from Nicaragua.....	189	101.2	46.8	34.1	24.6
Ten adult males from Costa Rica.....	191.8	102.9	47.5	35.1	25.8
One adult male from western Panama (type of <i>C. g. buxans</i> Bangs).....	192	112	46	34	24.5
FEMALES.					
Nine adult females ( <i>S. g. regius</i> ) from Tamaulipas (4) and Vera Cruz (5).....	197.4	113.9	49	35.4	25.6
Ten adult females ( <i>S. g. nelsoni</i> ) from Guerrero (5), Jalisco (1), Tepic (1), Colima (1), and Sinaloa (2).....	180.7	103.8	44	31.9	22.3
One adult male from Tabasco.....	174	90	38.5	31	24
One adult female from Campeche.....	189	105	44	32.5	24
Two adult females from Chiapas.....	179.3	91.5	46.5	32.8	23.5
Five adult females from Guatemala.....	189	105.6	47.8	33.2	23.7
Three adult females from British Honduras.....	178	98.5	44.5	33	22.7
Two adult females from southern Honduras.....	194	103.5	41.5	34	24.5
Two adult females from Nicaragua.....	185.5	101	44	34	25.5
Ten adult females from Costa Rica.....	188.8	103.7	44.9	34.6	24.8
One adult female from western Panama.....	192.5	106	47	34.5	25.5

I am not able to detect any fairly average characters to separate the birds from Costa Rica, western Panama, etc., from those from Guatemala and the extreme southern States of Mexico; hence the characters ascribed to *S. g. buxans* Bangs are in reality those of *S. g. guatemalensis* as compared with *S. g. regius* of Vera Cruz, San Luis Potosí, and southern Tamaulipas. It is very likely that Mr. Bangs compared his *S. buxans* with Vera Cruz examples of *S. g. regius*, considering the latter to be true *S. guatemalensis*, and hence committed the error of redescribing *S. g. guatemalensis* as a new form.

region either duller red or else dark sooty tinged with red, black of foreneck, upper chest, and upper parts duller, and bars on under parts much less sharply defined.

*Young female*.—Similar to the young male, but loreal, orbital, and malar regions sooty, slightly, if at all, tinged with red.

Southern Mexico, in States of Oaxaca (Tehuántepec City; Santa Efigénia; Chihuitán; Tolosa; Rio Givicia), Tabasco (Frontera; Teapa), Campeche (Apazote), Yucatan (Tunkas; Labna; Buctzotz; Izamál; La Vega), and Chiapas (Tumbalá; Huehuetán; Palenque; Canjób; Teopisca), and southward through Guatemala (Savana Grande; Dueñas; Médio Monte; Volcan de Agua; Rabinál; San Gerónimo; Retalhuleu; Los Amates, Yzabál; Patulúl, Sololá; Chapulco), British Honduras (Belize; Cayo; Orange Walk; near Manatee Lagoon), Honduras (Omoa; Truxillo; Yaruca; Rio Segóvia) Salvadór (San Carlos; San Salvadór; Volcan de San Miguél), Nicaragua (Lavala; Matagalpa; San Gerónimo, Chinandega; San Rafael del Norte; Grenada; Ocotál; Rio Escondido; Virgin Bay; Realejo), and Costa Rica (Grécia; Angostura; San José; La Palma and Rancho Redondo de San José; La Palma de Nicoya; Cerro de la Candelária; Santo Domingo de San Mateo; Bebedero; Volcan de Miravalles; Tenório; Lepanto; Las Trojas; Tres Rios; Pigres; Barranca; Pozo del Rio Grande; Paso Real; Boruca; Copéy and Santa Maria de Dota; Jiménez; Guayabo; Bonilla; Sipúrio), to western Panamá (Divala; Santiago de Verágua).

*Picus guatemalensis* HARTLAUB, Rev. Zool., vii, 1844, 214 (Guatemala; coll. Bremen Mus.?).—SUNDEVALL, Consp. Av. Picin., 1866, 5, part.

[*Picus*] *guatemalensis* GIEBEL, Thes. Orn., iii, 1876, 156.

[*Campephilus*] *guatemalensis* GRAY, Gen. Birds, ii, 1845, 436.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 392, part.—RIDGWAY, Man. N. Am. Birds, 1887, 281, part.

*Campephilus guatemalensis* SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (Santiago de Veragua, w. Panama).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 130 (San José, Grecia, and Angostura, Costa Rica); Bull. U. S. Nat. Mus., no. 4, 1876, 34 (Chihuitan and Tehuantepec City, Oaxaca).—GRAY, List Birds Brit. Mus., Capit. and Pucid., 1868, 57, part (Honduras).—FRANTZIUS, Journ. für Orn., 1869, 363 (Costa Rica).—BOUCARD, Liste Ois. récol. Guat., 1878, 27; Proc. Zool. Soc. Lond., 1883, 452 (n. Yucatan; habits).—SUMICHRAST, La Naturaleza, v, 1882, 240 (Santa Efigenia, Oaxaca).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 398 (La Palma de Nicoya, w. Costa Rica; habits); vi, 1884, 387, 406 (Sucuyá and Los Sábalos, Nicaragua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Grecia, Jiménez, Las Trojas, and Cartago, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 582, 591 (Truxillo and Rio Segovia, Honduras).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Tunkas and Labna, Yucatan).—CHERRIE, Auk, ix, 1892, 327 (San José, Costa Rica, accidental; common coastwise).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 518 (Rio Escondido, Nicaragua).—UNDERWOOD, Ibis, 1896, 443 (Volcan de Miravalles, Costa Rica).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 91 (Los Amates and Patulul, Guatemala).

- [*Campephilus*] *guatemalensis* GRAY, Hand-list, ii, 1870, 187, no. 8630, part.—  
SCLATER and SALVIN, Nom. Av. Neotr., 1873, 98, part.
- Campophilus guatemalensis* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 473, part  
(Teapa, Tabasco; Buctzotz, Yucatan; Orange Walk, Cayo, and Belize, Brit.  
Honduras; Honduras; Savana Grande, Medio Monte, Volcan de Fuego, and  
Pacific coast distr., Guatemala; near Virgin Bay, Nicaragua; Bebedero, San  
José, and Dota, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves,  
ii, 1895, 446, part (Tehuantepec City, Chihuitan, and Santa Efigenia, Oaxaca;  
Izamal, Tunkas, Labna, etc., Yucatan; Brit. Honduras; Rabinál, San  
Gerónimo, Retalhuleu, etc., Guatemala; Volcan de San Miguel, Salvador;  
Omoa, etc., Honduras; Matagalpa, etc., Nicaragua; Lepanto, Rio Frio, Can-  
delaria Mts., Jiménez, etc., Costa Rica; Santiago de Veragua, w. Panama).—  
FERRY, Pub. 146, Field Mus. N. H., Orn. Ser., i, no. 6, 1910, 266 (Guayabo,  
Costa Rica).
- [*Campophilus*] *guatemalensis* SHARPE, Hand-list, ii, 1900, 229, part.
- [*Dryocopus*] *guatemalensis* BONAPARTE, Consp. Av., i, 1850, 133.
- Dryocopus guatemalensis* SCLATER and SALVIN, Ibis, 1859, 135, part (Honduras).—  
TAYLOR, Ibis, 1860, 119 (San Pedro, Honduras).
- Dryocopus guatemalensis* SCLATER, Proc. Zool. Soc. Lond., 1858, 359 (Omoa,  
Honduras).
- [*Dryotomus*] *guatemalensis* BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp.  
Volucr. Zygod., 1854, 7).
- Megapicus guatemalensis* MALHERBE, Mon. Pict., i, 1861, 19, part; iii, 1862,  
pl. 7, figs. 1, 2, 3, 4, 5.
- Phloeocastes guatemalensis* CABANIS, Journ. für Orn., 1862, 175 (Costa Rica;  
crit.).
- Picus guatemalensis* (not *Picus guatemalensis* Hartlaub) SUNDEVALL, Consp. Av.  
Picin., 1866, 5, part.
- Scapanus guatemalensis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863.  
92, part (Costa Rica).
- [*Scapanus*] *guatemalensis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890,  
215, part (Costa Rica).
- Scapanus guatemalensis* SALVADORI, Atti Soc. Ital. Torino, iv, 1868, 183 (Costa  
Rica).
- Scapanus guatemalensis guatemalensis* RIDGWAY, Proc. Biol. Soc. Wash., xxiv,  
Feb. 24, 1911, 34 (geog. range).
- Picus lessonii* LESSON, L'Echo du Monde Sav., 11 ann., no. 52, Jan. 5, 1845,  
col. 921 of vol. for 1844 (Realejo, Nicaragua and San Carlos, Salvador; coll.  
A. Lesson); Descr. Mam. et Ois., 1847, 203 (reprint).
- Campophilus guatemalensis buxans* BANGS,<sup>a</sup> Auk, xviii, Oct., 1901, 360 (Divala,  
Chiriqui, w. Panama; coll. E. A. and O. Bangs); xxiv, 1907, 293 (Boruca  
Paso Real, and Pozo del Rio Grande, s. w. Costa Rica); Bull. Mus. Comp.  
Zool., xxxix, 1903, 146 (Yaruca, Honduras).
- Campephilus guatemalensis buxans* CARRIKER, Ann. Carnegie Mus., vi, 1910,  
591 (Costa Rica; crit.).

<sup>a</sup> Apparently Mr. Bangs compared his specimens from Panama and Costa Rica with examples of the large form (*S. g. regius*) from eastern Mexico, supposing the latter to be the typical *S. guatemalensis*; but Guatemalan specimens are practically identical with those from Costa Rica and western Panama, and hence *S. g. buxans* becomes a synonym of *S. g. guatemalensis*.



## SCAPANEUS GUATEMALENSIS NELSONI Ridgway.

## NELSON'S IVORY-BILL.

Similar to *S. g. guatemalensis* but black of upper parts, neck, and chest less sooty (that of foreneck glossy, slightly bluish), that of chest more extended; back-stripes whiter (less yellowish); lighter bars on under parts of body paler and narrower; yellow on under side of wings paler; and average measurements decidedly smaller.

*Adult male*.—Length (skins), 290–330 (304); wing, 165.5–187 (176.6); tail, 95–105.5 (98); culmen, 43–50 (45.1); tarsus, 31–33.5 (32.3); outer anterior toe, 19.5–25 (23.6).<sup>a</sup>

*Adult female*.—Length (skins), 281–350 (307); wing, 174–189 (180.7); tail, 94.5–113 (103.8); culmen, 40.5–49 (44); tarsus, 30–33.5 (31.9); outer anterior toe, 20–24 (22.3).<sup>a</sup>

Southwestern Mexico, in States of Sinaloa (Mazatlán; Presidio de Mazatlán; Escuinapa; Brazil; Mt. Juan Lisiarraga, 5,500 ft.; Las Cabras I.), Jalisco (Tonila; Bahía de Banderas), Colima (Río de la Armería; Manzanillo; Santiago; Cualata; Jacolapa), Michoacán (La Salada; Volcan de Jorulla), and Guerrero (Acapulco; Dos Arroyos; El Zopilote; El Rincón; Tecpán; Papayo; La Saluda; Omilteme), and Territory of Tepic (San Blas; Tepic).

*Campephilus guatemalensis* (not *Picus guatemalensis* Hartlaub) LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 293 (Mazatlan, Sinaloa; Río de la Armería, Colima).

*Campophilus guatemalensis* HARGITT, Cat. Birds Brit. Mus., xvi, 1890, 473, part (Mazatlan and Presidio near Mazatlan, Sinaloa; Tepic; Tonila, Jalisco; Santiago, Cualata, and Jacolapa, Colima).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 446, part (localities in Sinaloa, Tepic, Jalisco, and Colima; Dos Arroyos, Guerrero).

*C[ampephilus] guatemalensis* RIDGWAY, Man. N. Am. Birds, 1887, 281, part.

*Campephilus guatemalensis guatemalensis* MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 352 (Escuinapa, Brazil, Las Cabras Islands, and Mt. Juan Lisiarraga, s. Sinaloa).

*Scapanus guatemalensis nelsoni* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 34 (El Rincón, Guerrero; coll. U. S. Nat. Mus.).

## SCAPANEUS GUATEMALENSIS REGIUS (Reichenbach).

## VERA CRUZ IVORY-BILL.

Similar to *S. g. nelsoni* but much larger (even than *S. g. guatemalensis*), and black of foreneck, chest, etc., rather less intense.

*Adult male*.—Length (skins), 325–367 (353); wing, 183.5–205 (194.6); tail, 93.5–117.5 (106.6); culmen, 48–56.5 (51.8); tarsus, 33.5–38 (36); outer anterior toe, 25–30 (26.7).<sup>a</sup>

*Adult female*.—Length (skins), 318–384 (348); wing, 187–209 (197.4); tail, 105–123.5 (113.9); culmen, 43–53 (49); tarsus, 34.5–37 (35.4); outer anterior toe, 23.5–27 (25.6).<sup>b</sup>

<sup>a</sup> Ten specimens.

<sup>b</sup> Nine specimens.

Central-eastern Mexico, in States of Tamaulipas (Tampico; Tamesí, near Tampico; Alta Mira; Victoria; Cañon de Caballeros; Santa Leonora; Rio de la Cruz), San Luís Potosí (Vallés), and Vera Cruz (Miradór; Orizaba; Córdova; Jalapa; Santa Ana near Jalapa; Colipa; Papantla; Uvero; Santecomapám; Pasa Nueva; Buena Vista; Puebla Vieja; Paso de Milpa; Misantla; Medellín; Laguna Verde; Llano Verde; San Juan Martín). Mexico (near City of Mexico)?

*Dryocopus erythrops* (not *Picus erythrops* Valenciennes) SCLATER, Proc. Zool. Soc. Lond., 1856, 306 (Cordova, Vera Cruz).

(?) *Campephilus guatemalensis* SCLATER, Cat. Am. Birds, 1862, 331 (s. Mexico).

*Campephilus guatemalensis* SCLATER, Proc. Zool. Soc. Lond., 1864, 177 (near City of Mexico).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 158 (Santa Ana and Paso de Milpa, Vera Cruz).—RICHMOND, Proc. U. S. Nat. Mus., xviii, 1896, 629 (Alta Mira, Tamaulipas).

[*Campephilus*] *guatemalensis* GRAY, Hand-list, ii, 1870, 187, no. 8630, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 98, part.

(?) [*Campephilus*] *guatemalensis* GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 57, part (Mexico).

[*Campephilus*] *guatemalensis* RIDGWAY, Man. N. Am. Birds, 1887, 281, part.

*Campephilus guatemalensis guatemalensis* PHILLIPS, Auk, xxviii, Jan. 1911, 76 (Santa Leonora and Rio de la Cruz, Tamaulipas).

*Campophilus guatemalensis* HARGITT, Cat. Birds Brit. Mus., xvi, 1890, 473, part (Tampico and Tamesí near Tampico, s. Tamaulipas; Misantla, Laguna Verde, Santa Ana near Jalapa, Jalapa, and Colipa, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 446, part (Papantla, San Juan Martín, Laguna Verde, Orizaba, Uvero, Cordova, Santecomapam, Llano Verde, and Playa Vicente, etc., Vera Cruz; localities in Tamaulipas).

[*Campophilus*] *guatemalensis* SHARPE, Hand-list, ii, 1900, 229, part.

*Dryocopus guatemalensis* SCLATER, Proc. Zool. Soc. Lond., 1857, 220 (Santecomapam, Vera Cruz; crit.).—(?) SCLATER and SALVIN, Ibis, 1859, 135, part (s. Mexico).—SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 560 (Tierra Caliente, Vera Cruz).

*Megapicus guatemalensis* MALHERBE, Mon. Pict., i, 1861, 19, part (Papantla, Vera Cruz).

(?) *S[capaneus] guatemalensis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 92, part (Mexico).

[*Scapaneus*] *guatemalensis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215, part (Mexico).

[*Dryotomus*] *odoardus* BONAPARTE, Notes Orn. Coll. Delattre, 1854, 85, footnote, in text (Mexico).

*Dryotomus odoardus* BONAPARTE, Notes Orn. Coll. Delattre, 1854, 86, footnote, in text (Mexico).

[*Dryocopus*] *regius* LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 75 (Mexico; nomen nudum!).

[*Campephilus*] *regius* REICHENBACH, Handb., Scansores, Picinæ, 1854, 393, pl. 694, figs. 4331, 4332 (Papantla, Vera Cruz; coll. Berlin Mus.).

[*Driopicus*] *regius* BONAPARTE, Ateneo Italiano, ii, 1854, 122 (Consp. Volucr. Zygod., 1854, 8).

*Scapaneus guatemalensis regius* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 34 (geog. range).

## Genus CNIPARCHUS Cabanis and Heine.

(?) *Megapicos*<sup>a</sup> MALHERBE, Bull. Soc. Hist. Nat. Moselle, 5e cahier, 1848-1849, 17. (Type, by original designation, *M. grayi* Malherbe=*Picus pollens* Bonaparte.)

*Cniparchus*<sup>b</sup> CABANIS and HEINE, Mus. Hein., iv, heft 2, July 11, 1863, 98. (Type, *Picus hæmatogaster* Tschudi.)

Large Picidæ (wing about 173-193 mm.) resembling *Scapanus* but differing in relatively longer and more slender bill, much shorter (rounded and "bushy" instead of pointed) crest, shorter and more rounded wing (longest primaries exceeding secondaries by less than one-fifth the length of wing), with relatively larger and broader tenth primary, relatively longer tarsus, and banded inner webs of remiges.

Bill longer than head, rather slender, regularly wedge-shaped in vertical profile, decidedly broader than deep at anterior end of nostrils; culmen straight for most of its length but very faintly convex toward base, sharply ridged; gonys a little more than twice as long as mandibular rami, distinctly ridged, straight for greater part but slightly convex basally; supranasal ridge very distinct, running out to edge of maxilla at a little less than one-third the distance from tip to base of tomium. Nostril large, longitudinally elliptical-oval, much nearer to tomium than to culmen, at least partially covered by small antrorse prefrontal feathers. Malar apex and chin with feathers not distinctly antrorse. Orbital region extensively and completely naked. Wing rather short, much rounded, the longest primaries exceeding secondaries by less than one-fifth the length of wing; fifth, sixth, and seventh primaries longest, ninth shorter than fourth, tenth (outermost) nearly two-thirds as long as ninth, strongly bowed or incurved, very broad (greatest width equal to one-sixth or more the length). Tail nearly two-thirds as long as wing. Tarsus much longer than outer hind toe without claw.<sup>c</sup>

*Coloration*.—Inner webs of remiges blackish broadly banded or transversely spotted with white or buffy; rump red or buffy; a white or buffy stripe from nostrils across lores and beneath orbital and auricular regions to side of neck; pileum red; rest of plumage black, the under parts of body dark red in *C. hæmatogaster* and *C. h. splendens*, barred with black and tawny in *C. pollens*; bill black. (*C. hæmatogaster* and its subspecies have the rump red, and no white on back; *C. pollens* has the lower back and rump pale buff, lower rump

<sup>a</sup> The interrogation mark here has reference to the question of whether *Picus pollens* and *P. hæmatogaster* are really congeneric. (See remarks under footnote c.)

<sup>b</sup> "Von κνίψ, Holzwurm und ἀρχω, herrschen." (Cabanis and Heine.)

<sup>c</sup> The generic description (except as to color characters) is taken entirely from the type of the genus *C. hæmatogaster* (Tschudi), the only skin available at the present time of *C. pollens* (Bonaparte), a species which is doubtfully congeneric but which agrees fairly well in structural and color characters, being so young that I cannot be sure as to relative proportions of the bill, etc.



barred with black and tawny-buff, and a white stripe along each side of interscapular area; there is also a white or buff postocular stripe in *C. hæmatogaster* and *C. h. splendens*, wanting in *C. pollens*.)

*Range*.—Panamá to Peru. (Two or three species?)

**CNIPARCHUS HÆMATOGASTER SPLENDENS (Hargitt).**

**SPLENDID WOODPECKER.**

Similar to *C. h. hæmatogaster*<sup>a</sup> but adult male with foreneck and throat crimson (instead of black), spots or bands on inner webs of remiges buff-yellow instead of white and much broader, and feathers of hindneck black, instead of white, at base.

*Adult male*.—Pileum (including crest), hindneck, sides of neck, foreneck (together with more or less of lower throat), chest, and more or less of under parts of body carmine red; a black auricular area, continued, narrowly, beneath bare orbital space across lores to anterior portion of forehead, where forming a narrow frontal band; a narrow (sometimes interrupted) supra-auricular or postocular stripe of buff; a very broad subauricular stripe of buff, extending anteriorly over suborbital and rictal regions and upper half of malar region to, and including, the nasal tufts; lower half of malar region, chin, and more or less of upper throat uniform black; rest of under parts nearly uniform carmine red in unworn plumage, but usually the breast, abdomen, sides, and flanks dull blackish, washed, more or less, with red, and barred with pale fulvous or brownish buffy, the under tail-coverts mostly black; back,<sup>b</sup> scapulars, wings, upper tail-coverts, and tail, plain black, the primaries passing into a lighter, dull grayish brown color distally and tipped with dull whitish; rump carmine red; under wing-coverts and axillars pale yellowish buff, those near edge of wing narrowly barred with dusky; inner webs of remiges with very large quadrate spots of yellowish buff; bill dull black or slate-blackish; iris yellow;<sup>c</sup> legs and feet blackish or dusky (in dried

<sup>a</sup> *P[icus] hæmatogaster* Tschudi, Wiegmann's Archiv für Naturg., 1844, 302 (Av. Consp. Peruv., p. 42), pl. 25 (Peru).—*Picus hæmatogaster* Sundevall, Consp. Av. Picin., 1866, 6.—*D[ryocopus] hæmatogaster* Gray, Gen. Birds, ii, 1845, 436.—*Megapicus hæmatogaster* Malherbe, Mon. Pict., i, 1861, 27; iii, 1862, pl. ix, figs. 1, 2, 3.—*C[ampephilus] hæmatogaster* Reichenbach, Handb., Scansores, Picinæ, 1854, 395, pl. 651, fig. 4343.—*Campophilus hæmatogaster* Hargitt, Cat. Birds Brit. Mus., xvi, 1890, 478.—*C[niparchus] hæmatogaster* Cabanis and Heine, Mus. Hein., iv, heft. 2, 1863, 98.

I have not seen a specimen of this subspecies. A skin from Bogotá, in the collection of the U. S. National Museum, apparently an adult female, seems to be intermediate in coloration between *C. h. hæmatogaster* and *C. h. splendens*.

<sup>b</sup> Hargitt (Cat. Birds Brit. Mus., xvi, 480) describes the "upper and middle back pale buffy yellow, the outer and lower feathers barred with dusky black." In all the Panama specimens examined by me (four adults) the whole back is black, with a very small amount of wholly concealed whitish spotting.

<sup>c</sup> T. K. Salmon.

skins); length (skins), 308–320 (314); wing, 181.5–186.5 (184); tail, 94–100.5 (97.2); exposed culmen, 46.5–50 (48.2); tarsus, 34–37 (35.5); outer anterior toe, 22–23.5 (22.7).<sup>a</sup>

*Adult female*.—Similar to the adult male, but whole foreneck and throat black, and buff subauricular stripe extended, more or less, down sides of neck; length (skins), 292–305 (298.5); wing, 178–185 (181.5); tail, 95–98 (96.5); exposed culmen, 45–46.5 (45.7); tarsus, 35–39 (37); outer anterior toe, 21–24 (22.5).<sup>a</sup>

Panamá (Santiago de Veragua; Calovévora; Mt. Pirrí), Colombia (Santa Elena and Remedios, Antioquia), and western Ecuador (Paramba).

*Campephilus hæmatogaster* (not *Picus hæmatogaster* Tschudi) SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (Santiago de Veragua, Panama; crit.); 1870, 212 (Calovévora, Veragua).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 532 (Santa Elena and Remedios, Antioquia, Colombia).

*C[niparchus] hæmatogaster* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 98 (Colombia).

*[Cniparchus] hæmatogaster* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 216 (Colombia).

*[Campephilus] hæmatogaster* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 98, part (Veragua).

*Campophilus splendens* HARGITT, Ibis, Jan., 1889, 58 (Santa Elena, Antioquia, Colombia; coll. E. Hargitt); Cat. Birds Brit. Mus., xviii, 1890, 480 (Calovévora and Santiago, Panama; Antioquia, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 449.—HARTERT, Novit. Zool., v, 1898, 497 (Paramba, n. w. Ecuador, 3,500 ft.; crit.).

*[Campophilus] splendens* SHARPE, Hand-list, ii, 1900, 229.

### Genus XIPHIDIOPICUS Bonaparte.

*Xiphidiopicus* BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11). (Type, by monotypy, *Picus percussus* Temminck.)

*Xiphidiopipo* SUNDEVALL, Consp. Av. Picin., 1866, 115. (To replace *Xiphidiopicus*, on grounds of purism.)

Medium-sized Picidæ (wing about 105–130 mm.) with outer hind toe longer than outer front toe, tail about three-fourths as long as wing, with very broad rectrices, upper parts mostly plain grayish green, under parts yellow streaked and barred (except on abdomen) with blackish and sides of head white except a dusky auricular stripe.

Bill about as long as head or a little shorter, compressed (width at anterior end of nostrils less than its depth at same point), very narrowly chisel-shaped at tip; culmen slightly longer than tarsus, nearly or quite straight, distinctly ridged; gonys decidedly longer than mandibular rami, straight, distinctly ridged, not prominent basally; supranasal ridge and prenasal groove distinct, parallel with culmen, running out to or toward culmen at a point about one-fourth the dis-

<sup>a</sup> Two specimens, from Mt. Pirri, eastern Panama.

tance from tip to base of tomium. Nostril small, narrowly elliptical, situated about midway between culmen and tomium, covered by small, hair-like, antrorse prefrontal feathers. Feathers of malar apex antrorse, with bristly tips, those of chin with distinct though very slender antrorse or semiantrorse bristle-like tips. Orbital region naked for a narrow space around eye, the margin of eyelids unfeathered. Wing moderate, rounded, the longest primaries exceeding secondaries by less than one-fifth the length of wing; fifth, sixth, and seventh primaries longest, the ninth shorter than second, the tenth (outermost) about half as long as ninth. Tail about three-fourths as long as wing, the rectrices relatively very broad, the middle ones short-acuminate at tip. Tarsus shorter than either outer toe with claw; outer hind toe decidedly longer than outer front toe.

*Coloration*.—Above mostly plain grayish green, the tail gray obsoletely barred with darker, the primaries blackish spotted with grayish green and dull whitish; under parts yellow, streaked anteriorly and laterally, barred posteriorly, with blackish; sides of head white, except an auricular stripe of blackish or grayish; a narrow black stripe on throat, confluent with a red jugular patch; adult male with pileum and hindneck bright red, adult female with crown black streaked with white.

*Range*.—Island of Cuba (including Isle of Pines). (Monotypic.)

#### KEY TO THE SUBSPECIES OF *XIPHIDIOPICUS PERCUSSUS*.

- a. Larger (male averaging: Wing 120.4, tail 87.9, culmen 25.7, tarsus 23.4; female, wing 118.3, tail 91.4, culmen 21.8, tarsus 23); coloration darker, the under parts more distinctly streaked, the streaks more blackish; red of foreneck more extended; auricular stripe darker gray and broader. (Cuba.)

*Xiphidiopicus percussus percussus* (p. 183).

- aa. Smaller (male averaging: Wing 108.8, tail 78.3, culmen 25.3, tarsus 21.9; female, wing 107.6, tail 81.8, culmen 21.8, tarsus 20.6); coloration paler, the under parts less distinctly streaked, the streaks more grayish; red of foreneck more restricted; auricular stripe narrower, more grayish. (Isle of Pines.)

*Xiphidiopicus percussus insulæ-pinorum* (p. 185).

#### *XIPHIDIOPICUS PERCUSSUS PERCUSSUS* (Temminck).

##### CUBAN GREEN WOODPECKER.

*Adult male*.—Pileum (except anterior part of forehead) and hindneck bright poppy red, slightly darker on forehead and crown, where more or less broken by exposure of the dusky basal portion of the feathers, the forehead sometimes with a few small streaks or elongated spots of white; back, scapulars, rump, upper tail-coverts, wing-coverts, and secondaries plain bright grayish yellowish green (nearly oil green), lighter and more yellowish on rump, paler and grayer on upper tail-coverts,<sup>a</sup> the secondaries rather broadly and regularly, but

<sup>a</sup> The lower rump is sometimes more or less distinctly barred with dusky or blackish, and the upper tail-coverts usually have alternate black and white shaft-streaks.



rather indistinctly, barred with blackish; tail slate-gray, rather broadly but indistinctly barred with darker, the shafts of rectrices black; primaries dull black or slate-black, broadly barred or spotted with light yellowish olive-green, these markings paler and more grayish on distal quills; nasal tufts and anterior portion of forehead, broad superciliary stripe, loreal, suborbital and malar regions, sides of chin and throat, and sides of neck white (tinged with greenish yellow in fresh plumage), the first two sometimes tinged with pale brownish, sometimes with bristly tips or terminal margins blackish; auricular region grayish dusky, with narrow shaft-streaks of white, this dusky grayish auricular stripe, continued, more narrowly, down side of neck; median portion of chin and most of throat black; extreme lower throat, foreneck, and upper chest bright poppy red, this forming a somewhat triangular patch, widened and convex posteriorly; rest of under parts citron or sulphur yellow, deepening into canary yellow on abdomen, the lower chest and breast streaked with grayish dusky or blackish, the sides more broadly streaked and barred, the flanks still more broadly barred with the same; under tail-coverts marked with broad V-shaped bars of blackish; under wing-coverts yellowish white or very pale yellow, more or less heavily barred or spotted with blackish; inner webs of remiges dusky, broadly barred with yellowish white, except on distal portion of outer primaries (extensively) and terminal portion of secondaries; under surface of tail pale yellowish gray, more or less distinctly barred with blackish; bill, blackish, the mandible more grayish (bluish gray in life), at least basally; feet grayish (yellowish gray or olive-greenish in life?); length (skins), 215–240 (231); wing, 113–130.5 (120.4); tail, 82–90.5 (87.9); culmen 24–28 (25.7); tarsus, 22–25.5 (23.4); outer anterior toe, 18–21.5 (19.3).<sup>a</sup>

*Adult female*.—Similar to the adult male, but forehead and crown black, sharply streaked with white; length (skins), 205–224 (219); wing, 110–125.5 (118.3); tail, 85–97.5 (91.4); culmen, 20–23 (21.8); tarsus, 22–24 (23); outer anterior toe, 17–20 (18.2).<sup>a</sup>

Island of Cuba (Guamá; El Guamá; Monte Verde; Guantánamo; Baracoa; Holquín; Camaguéy; near Cardenas; near Trinidad; Figuabas).

*Picus percussus* TEMMINCK, Pl. Col., 66e livr., (vol. iv), June, 1826, pls. 390, 424, and text (Cuba; coll. Leyden Mus.).—VIGORS, Zool. Journ., iii, 1827, 444.—D'ORBIGNY, in La Sagra's Hist. Fis., etc., Cuba, Aves, 1839, 109, French ed., 143.—DENNY, Proc. Zool. Soc. Lond., 1847, 39.—LEMBEYE, Aves de la Isla de Cuba, Suppl., 1850, 131.—THIENEMANN, Journ. für Orn., 1857, 153.—SUNDEVALL, Consp. Av. Picin., 1866, 48.

*D[endrobates] percussus* GRAY, Gen. Birds, ii, 1845, 437.

*Chloropicus percussus* MALHERBE, Mém. Acad. Metz, xxx, 1849, 352.

<sup>a</sup> Ten specimens.

- [*Chloronerpes*] *percussus* BONAPARTE, Consp. Av., i, 1850, 118.—GRAY, Hand-list, ii, 1870, 199, no. 8786.—GUNDLACH, Journ. für Orn., 1861, 334.
- Chloronerpes percussus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 407, pl. 662, figs. 4398, 4399.—GUNDLACH, Journ. für Orn., 1856, 102 (habits); 1874, 151 (habits); Repert. Fisico-Nat. Cuba, i, 1866, 294; Contr. Orn. Cuba, 1876, 115, 273.—BREWER, Proc. Bos. Soc. N. H., vii, 1860, 307.—GRAY, List Birds Brit. Mus., Picidæ, 1868, 107.
- Xiphidiopicus percussus* SCLATER, Cat. Am. Birds, 1862, 339.—CORY, Auk, iii, 1886, 376; Birds West Ind., 1889, 171; Cat. West Ind. Birds, 1892, 12, 104, 128.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 377.—GUNDLACH, Auk, viii, 1891, 189, in text (near Cardenas, Cuba; descr. xanthochroic variety); Orn. Cubana, ed. 1895, 140.—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 301 (near Trinidad, s. Cuba).—MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 24 (Figuabas, e. Cuba).
- [*Xiphidiopicus*] *percussus* BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 100.—CORY, List Birds West Ind., 1885, 20.—SHARPE, Hand-list, ii, 1890, 223.
- Xiphidiopicus percussus percussus* BANGS, Proc. Biol. Soc. Wash., xxiii, Dec. 29, 1910, 174, in text.
- Picus rüppellii* WAGLER, Syst. Av., 1827, *Picus*, sp. 29; Isis, 1829, 509.

### XIPHIDIOPICUS PERCUSSUS INSULÆ-PINORUM Bangs.

#### ISLE OF PINES GREEN WOODPECKER.

Similar to *X. p. percussus*, but smaller; coloration averaging paler, especially the under parts, which are more narrowly or less distinctly streaked, the streaks less blackish (more grayish), red of foreneck more restricted, and auricular stripe lighter gray, and rather narrower.

*Adult male*.—Length (skins), 195–210 (204.5); wing, 105–111 (108.8); tail, 76–81 (78.3); culmen, 23.5–27 (25.3); tarsus, 21–23 (21.9); outer anterior toe, 16.5–18.5 (17.6).<sup>a</sup>

*Adult female*.—Length (skins), 195–205 (201); wing, 106–109.5 (107.6); tail, 77–85.5 (81.8); culmen, 21–23.5 (21.8); tarsus, 20.5–21 (20.6); outer anterior toe, 15–16.5 (15.6).<sup>a</sup>

Isle of Pines, near Cuba (Nueva Gerona; Santa Fé; Júcaro; Callebónita).

*Xiphidiopicus percussus* (not *Picus percussus* Temminck) BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 206 (Isle of Pines, Cuba).

*Xiphidiopicus percussus insulæ-pinorum* BANGS, Proc. Biol. Soc. Wash., xxiii, Dec. 29, 1910, 173 (Santa Fé, Isle of Pines; coll. Mus. Comp. Zool.).

### Genus VENILIORNIS Bonaparte.

*Dendrobates* (not of Wagler, 1830) SWAINSON, Fauna Bor.-Am., ii, 1831, 300. (Type, *Picus affinis* Swainson.)

*Veniliornis* [genus] BONAPARTE, Ateneo Italiano, ii, 1854, 125 (Consp. Volucr. Zygod., 1854, 10). (Type, as designated by Gray, 1855, *Picus sanguineus* Lichtenstein.)

*Eleopicus* [subgenus] BONAPARTE, Ateneo Italiano, ii, 1854, 125 (Consp. Volucr. Zygod., 1854, 10). (Type, *Picus olivinus* Malherbe.)

<sup>a</sup> Four specimens.

- Capnopicus* BONAPARTE, Ateneo Italiano, ii, 1854, 125 (Consp. Volucr. Zygod., 1854, 10). (Type, *Picus fumigatus* Lafresnaye and D'Orbigny.)
- Callipicus* BONAPARTE, Ateneo Italiano, ii, 1854, 125 (Consp. Volucr. Zygod., 1854, 10). (Type, *Picus callonotus* Waterhouse.)
- Campias* CABANIS and HEINE, Mus. Hein., iv, heft 2, Sept., 1863, 145. (Type, *Picus tephrodops* Wagler=*P. passerinus* Linnæus.)
- Phaionerpes* REICHENBACH, Handb. Scansores, Picinæ, 1854, 356. (Type, *Picus fumigatus* Lafresnaye and D'Orbigny.)
- Phæonerpes* (emendation) CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 139.
- "*Crypturonerpes* REICH[ENBACH] 1854." (Gray, Hand-list, ii, 1870, 200.)
- Erythronerpes* REICHENBACH, Handb. Scansores, Picinæ, 1854, 356. (Type, *Picus sanguineus* Lichtenstein.)
- Erythronerpes* (emendation) CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 142.

Small Picidæ (wing about 80–105 mm.) with outer hind toe longer than outer front toe, tail less than two-thirds as long as wing, inner hind toe relatively very small (the toe and claw together less than half as long as outer toe), back plain olive, olive-russet, orange-russet, or red, no white spots on outer webs of primaries, and under parts plain olive-brown or olive, or barred with olive or dusky and whitish, or else plain whitish and upper parts red.

Bill shorter than head, rather stout, about as wide as deep at anterior end of nostril, rather abruptly contracted in width terminally, the tip distinctly chisel-shaped; culmen straight or very faintly convex, sharply ridged; gonys decidedly less than twice as long as mandibular rami, nearly straight, or very faintly concave terminally and convex basally, more or less distinctly ridged; supranasal ridge and prenasal groove very distinct, parallel with but far removed from culmen, running out to edge of maxilla at a point near or slightly anterior to middle of tomium. Nostril small and narrow, longitudinal, sometimes pointed anteriorly, covered by a distinct prefrontal antrorse tuft of small hair-like, bristle-tipped, feathers. Feathers of malar apex and chin antrorse, bristle-tipped. Orbits mostly feathered. Wing moderate or rather short, the longest primaries exceeding secondaries by much less than one-fourth (usually less than one-fifth) the length of wing; seventh and eighth, sixth and seventh, or fifth, sixth, and seventh primaries longest, the ninth shorter than fourth, the tenth (outermost) a little more than one-fourth to nearly one-half as long as ninth. Tail less than two-thirds (sometimes only half) as long as wing, the middle rectrices gradually and only moderately narrowed, and more or less strongly decurved, terminally. Tarsus nearly to quite as long as outer front toe with claw, decidedly shorter than culmen; outer hind toe decidedly longer than outer front toe; inner hind toe relatively very small, the digit and claw combined less than half as long as outer hind toe.



*Coloration*.—Inner webs of remiges spotted or banded with whitish, at least on proximal portion, but no white spots on outer webs; general color of upper parts plain olive-brown, olive, yellowish olive, golden olive or russet, or bright red; under parts usually barred with olive or dusky and whitish, sometimes plain olive (like upper parts), sometimes plain whitish (the upper surface bright red); adult males with pileum or nape (or both) bright red.

*Range*.—Southeastern Mexico to southern Brazil, Argentina, Bolivia, and Peru. (About twenty-six species, mostly South American.)

## KEY TO THE SPECIES AND SUBSPECIES OF VENILIORNIS.

- a. Under parts plain smoky brown or tawny-olive. (*Veniliornis oleaginus*.)
  - b. Sides of head conspicuously paler than general color, the orbital region dull whitish; chin and upper throat dull whitish, mottled with dark grayish. (Highlands in States of San Luis Potosí, Puebla, and Vera Cruz, eastern Mexico.).....***Veniliornis oleaginus oleaginus*** (p. 188)
  - bb. Sides of head not conspicuously paler than general color, the orbital region, chin, and upper throat pale brown or buffy brown.
    - c. Smaller (wing 82–98.5, tail 40–54.5, culmen 18.5–22.5, tarsus 15–19); coloration averaging deeper and brighter. (State of Vera Cruz to western Panama.)  
***Veniliornis oleaginus sanguinolentus*** (p. 190).
    - cc. Larger (wing 96–97, tail 49–50, culmen 21–24, tarsus 18.5–19); coloration averaging lighter and duller. (Mountains of Colombia and Venezuela to Peru, Bolivia, and Argentina.)  
***Veniliornis oleaginus fumigatus*** (extralimital).<sup>a</sup>
- aa. Under parts barred with grayish brown or olive and dull whitish. (*Veniliornis kirkii*.)
  - b. Wing-coverts with distinct small spots or streaks of yellow.
    - c. Coloration darker, the dusky bars on under parts much broader, the back, etc., less yellowish; larger (wing averaging 88.7, tail 54, culmen 22.2, tarsus 16.5). (Tobago and Trinidad.)....***Veniliornis kirkii kirkii*** (extralimital).<sup>b</sup>

<sup>a</sup> *Picus fumigatus* Lafresnaye and D'Orbigny, Voy. Am. Mérid., iv, pt. 3, 1839, 380, pl. 65, fig. 1 (Province of Corrientes, Argentina, to Chiquitos, Bolivia); Sundevall, Consp. Picin., 1866, 35.—*Dendrobates fumigatus* Gray, Gen. Birds, iii, 1849, App. p. 21; Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 342.—[*Chloronerpes*] *fumigatus* Bonaparte, Consp. Av., i, 1850, 118.—*Mesopicus fumigatus* Malherbe, Mon. Pic., ii, 1862, 54, pl. 57, figs. 3, 4.—*P[haeonerpes] fumigatus* Cabanis and Heine, Mus. Hein., iv, heft 2, 1863, 139.—*Veniliornis fumigatus* Oberholser, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 205.

This South American bird almost certainly requires subdivision.

<sup>b</sup> *P[icus]* (*Chloropicus*) *kirkii* Malherbe, Rev. Zool., viii, Nov., 1845, 400 (Tobago; coll. Brit. Mus.).—*C[hloronerpes] kirkii* Gray, Gen. Birds, ii, 1846, 443.—*Chrysoptilus kirkii* Jardine, Contr. Orn., 1848, 15, pl. 2.—*Mesopicus kirkii* Malherbe, Mon. Pict., iii, 1861, pl. 59, figs. 7, 8.—*Chloronerpes kirkii* Sclater, Cat. Am. Birds, 1862, 338 (Trinidad).—*E[rythronerpes] kirkii* Cabanis and Heine, Mus. Hein., iv, heft 2, 1863, 144, footnote (Tobago; Trinidad).—*Picus kirkii* Sundevall, Consp. Picin., 1866, 36.—*Dendrobates kirkii* Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 365, part (Trinidad; Tobago).—*Veniliornis kirkii* Oberholser, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 205.—*Veniliornis kirkii kirkii* Hellmayr, Novit. Zool., xiii, Feb., 1906, 39 (Tobago; Trinidad).

- cc. Coloration lighter, the dusky bars on under parts much narrower, the back, etc., more yellowish; smaller (wing averaging 82.1, tail 48.9, culmen 19, tarsus 15.4. (Venezuela.)... **Veniliornis kirkii continentalis** (extralimital).<sup>a</sup>
- bb. Wing-coverts without any yellowish spots or streaks or with only minute traces of the latter.
- c. Dusky bars on under parts narrower, less dark in color, the whitish bars relatively broader; auricular region much paler brownish.
- d. Whitish bars on chest, etc., narrower, less brownish; wing-coverts not tinged with red; bill stouter. (Central Colombia.) **Veniliornis kirkii ceciliae** (extralimital).<sup>b</sup>
- dd. Whitish bars on chest, etc., broader, more brownish; wing-coverts tinged with red; bill more slender. (Eastern Panama to western Ecuador.) **Veniliornis kirkii darienensis** (p. 192).
- cc. Dusky bars on under parts broader, darker in color, the whitish bars relatively narrower; auricular region much darker brownish. (Panama and southwestern Costa Rica.)..... **Veniliornis kirkii neglectus** (p. 193).

### VENILIORNIS OLEAGINUS OLEAGINUS (Lichtenstein).

#### OLEAGINOUS WOODPECKER.

*Adult male*.—Pileum and nape dark sooty or sooty blackish, passing into grayish brown on anterior portion of forehead, the feathers (except on forehead) broadly tipped with bright vermilion or poppy red, this nearly uniform on nape; back and scapulars plain yellowish tawny-olive to slightly grayish raw-umber brown, passing into a duller, more grayish brown or olive, hue on lower rump; upper tail-coverts and tail blackish brown, the lateral rectrices lighter brown (nearly sepia); wings plain sepia brown, the coverts tinged or indistinctly edged with the color of back; nasal tufts grayish brown, passing into blackish terminally; loreal, orbital, and auricular regions plain pale grayish brown (pale broccoli brown), paler (dull whitish) on orbital region; chin and throat (upper portion at least) dull whitish, more or less flecked with dusky grayish; rest of under parts plain yellowish tawny-olive (like upper parts); inner webs of remiges with broad bars or transverse spots of white, the distal portion (extensively on longer primaries) plain grayish brown; bill horn color, passing into blackish on culmen and terminal portion of maxilla; feet grayish dusky (in dried skins); length (skins), 163–175

<sup>a</sup> *Veniliornis kirkii continentalis* Hellmayr, Novit. Zool., xiii, Feb., 1906, 39 (Caripé, near Cumaná, Venezuela; coll. Tring Mus.).

<sup>b</sup> *Mesopicus ceciliae* Malherbe, Rev. et Mag. de Zool., Nov., 1849, 538 (Colombia).—[*Chloronerpes*] *ceciliae* Bonaparte, Consp. Av., i, 1850, 117.—*Chloronerpes ceciliae* Sclater, Proc. Zool. Soc. Lond., 1855, 161 (Bogotá, Colombia).—*Mesopicus ceciliae* Malherbe, Mon. Pict., ii, 1862, 71, pl. 60, figs. 1, 2.—*Chloronerpes ceciliae* Sclater, Proc. Zool. Soc. Lond., 1855, 161; Cat. Am. Birds, 1862, 338 (Bogotá, Colombia).—C [*Erythronerpes*] *ceciliae* Cabanis and Heine, Mus. Hein., iv, heft. 2, 1863, 143, footnote, part (Colombia).—*Picus ceciliae* Sundevall, Consp. Pict., 1866, 36.—*Dendrobates ceciliae* Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 366, part (Bogotá and Antioquia, Colombia).—*Veniliornis ceciliae* Oberholser, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 205.—[*Veniliornis*] *ceciliae* Sharpe, Hand-list, ii, 1900, 222, part.

(168.5); wing, 100–102 (100.8); tail, 52.5–58 (55.1); culmen, 22–24.5 (23.1); tarsus, 18–19 (18.3); outer anterior toe, 12–14.5 (13.8).<sup>a</sup>

*Young male*.—Similar to the adult male, but red of pileum duller, more broken by exposure of dusky basal portion of feathers, and not extending over nape; general color duller (less golden) olivaceous.

*Adult female*.—Similar to the adult male, but pileum and nape dusky, the feathers tipped with grayish brown; length (skins), 168–171 (170); wing, 100–102 (100.9); tail, 53.5–57 (55.7); exposed culmen, 21–22.5 (21.6); tarsus, 17–18 (17.5); outer anterior toe, 12.5–13 (12.7).<sup>b</sup>

Eastern Mexico, in States of San Luís Potosí (Jilitla), Vera Cruz (Jalapa; Córdoba; Orizaba; Playa Vicente?; Papantla), Puebla (Metlatoyuca; Huachinango), and Mexico (near City of Mexico).

*Picus oleaginus* LICHTENSTEIN, Preis-Verz. Mex. Thierw., 1830, 1 (Mexico); Journ. für Orn., 1863, 55 (reprint). *Nomen nudum*

[*Capnopicus*] *oleaginus* BONAPARTE, Ateneo Italiano, ii, 1854, 125 (Consp. Volucr. Zygod., 1854, 10).

*Ch[loronerpes (Phaionerpes)] oleagineus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 356, pl. 675, figs. 4467, 4468.

<sup>a</sup> Five specimens.

<sup>b</sup> Four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Four adult males from Puebla.....	100.8	55.6	23.1	18.1	13.6
One adult male from Vera Cruz (Jalapa).....	100.5	52.5	23	19	14.5
Four adult males ( <i>V. o. sanguinolentus</i> ) from Vera Cruz (Orizaba, Buena Vista, and Motzorongo).....	93.6	50.4	21.4	18.4	13.1
One adult male ( <i>V. o. sanguinolentus</i> ) from Oaxaca .....	91	52.5	23	18	13
One adult male ( <i>V. o. sanguinolentus</i> ) from Tabasco .....	87	47	22.5	18	13
Two adult males ( <i>V. o. sanguinolentus</i> ) from Guatemala.....	85	46	20.8	15.8	11.8
Three adult males ( <i>V. o. sanguinolentus</i> ) from British Honduras.	88.7	51.7	21.8	17	11.8
Three adult males ( <i>V. o. sanguinolentus</i> ) from Honduras.....	87.3	47	20	16.5	11.8
Eight adult males ( <i>V. o. sanguinolentus</i> ) from Nicaragua.....	86.1	47.7	20.7	16.9	12.1
Eight adult males ( <i>V. o. sanguinolentus</i> ) from Costa Rica.....	86	49.8	21.2	16.9	12.4
One adult male ( <i>V. o. sanguinolentus</i> ) from western Panama ..	86.5	.....	21.5	17.5	12.5
One (young?) male ( <i>V. o. fumigatus</i> ) from Colombia (Bogotá)..	96	50	21	18.5	13.5
One adult male ( <i>V. o. fumigatus</i> ) from Venezuela (Mérida).....	97	49	24	19	14.5
FEMALES.					
One adult female from San Luis Potosí.....	100.5	56	21.5	18	13
Two adult females from Puebla.....	101.5	55	21.2	17.5	12.7
One adult female from Vera Cruz (Jalapa).....	100	57	22.5	17	12.5
One adult female ( <i>V. o. sanguinolentus</i> ) from Vera Cruz (Buena Vista).....	91	50	20	17	12.5
Two adult females ( <i>V. o. sanguinolentus</i> ) from Yucatan.....	93.5	52.8	21	17	11.3
One adult female ( <i>V. o. sanguinolentus</i> ) from Chiapas .....	89	43.5	19.5	17.5	10.5
Three adult females ( <i>V. o. sanguinolentus</i> ) from Guatemala....	86.7	47.8	20.5	16.5	11.3
Two adult females ( <i>V. o. sanguinolentus</i> ) from British Honduras.	88.5	49.3	19.8	17	12.3
Two adult females ( <i>V. o. sanguinolentus</i> ) from Honduras.....	84	45	18.8	16	12
One adult female ( <i>V. o. sanguinolentus</i> ) from Nicaragua.....	85	43	19	16	12.5
Three adult females ( <i>V. o. sanguinolentus</i> ) from Costa Rica....	87.7	48.7	20.2	16.7	12.2
One adult female ( <i>V. o. fumigatus</i> ) from Colombia (Bogotá)....	101	57	22	18	13



*Chloronerpes oleaginus* GRAY, List Birds Brit. Mus., part iii, 1868, 112.

[*Chloronerpes*] *oleaginus* GRAY, Hand-list, ii, 1870, 200, no. 8808.

*Mesopicus oleaginus* MALHERBE, Mon. Pict., ii, 1862, 53; iii, 1862, pl. 57, figs. 6, 7.

*Dendrobates oleaginus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 344, part (Orizaba and Jalapa, Vera Cruz; near City of Mexico).

*Eleopicus oleaginus* CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 34 (Jalapa).

*Veniliornis oleaginus* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 205.

[*Veniliornis*] *oleaginus* SHARPE, Hand-list, ii, 1900, 221.

*Chloronerpes oleagineus* SCLATER, Proc. Zool. Soc. Lond., 1856, 307 (Cordova, Vera Cruz); 1859, 367 (Jalapa), 368 (Playa Vicente, Vera Cruz); 1864, 177 (near City of Mexico); Cat. Am. Birds, 1862, 337 (Orizaba; Jalapa).—

FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 159 (Jalapa).

[*Chloronerpes*] *oleagineus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99.

*Picus oleagineus* SUNDEVALL, Consp. Av. Picin., 1866, 35.

*P[haeonerpes]* *oleagineus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 140.

[*Phaeonerpes*] *oleagineus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 218.

*Dendrobates oleagineus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 347 (Papanila, Coatepec, Jalapa, Cordova, Uvero, Potrero, Orizaba, and Playa Vicente, Vera Cruz; Minerál de San Sebastian, Jalisco?).<sup>a</sup>

### VENILIORNIS OLEAGINUS SANGUINOLENTUS (Sclater).

#### CABOT'S WOODPECKER.

Similar to *V. o. oleaginus*, but smaller and with general coloration brighter, the back, etc., averaging more golden or tawny olivaceous, frequently tinged (sometimes conspicuously) with red, the sides of head, chin, and throat, much darker, the loreal, orbital, and auricular regions wood brown to raw-umber brown, the chin and throat dull grayish brown or brownish gray.

*Adult male*.—Length (skins), 135–176 (158.5); wing, 82–98.5 (87.6); tail, 43.5–54.5 (48.9); culmen, 19–22.5 (21.1); tarsus, 15–19 (17.1); outer anterior toe, 11.5–14.5 (12.3).<sup>b</sup>

*Adult female*.—Length (skins), 136–166 (150); wing, 82–95.5 (87.5); tail, 40–53 (48.1); culmen, 18.5–21.5 (20.1); tarsus, 16–17.5 (16.6); outer anterior toe, 10.5–13 (11.8).<sup>c</sup>

Southeastern Mexico, in States of Vera Cruz (Orizaba; Buena Vista; Motzorongo), Oaxaca (mountains near Santo Domingo), Tabasco (Teapa), Yucatan (La Vega; Puerto Morelos; Tizimín; Chichen-Itza), and Chiapas (Palenque), and southward through Guatemala (San José; Escuintla; Savana Grande; Choctúm; sources of Rio de la Pasión; Retalhuleu; Los Amates, Yzabál), British Honduras (Toledo; near Manatee Lagoon; Orange Walk), Honduras (Santa Ana; San Pedro Sula; Yaruca; Omoa), Nicaragua (San Rafael del Norte; Santo Domingo; Peña Blanca; Chontales; Matagalpa; Lavala; Rio Coca; Rio Escondido), and Costa Rica (Barranca; Jiménez; San Bernardo; La Hondura; El General; Turrialba; Guá-

<sup>a</sup> Specimens from Jalisco should be carefully compared with those from eastern Mexico.

<sup>b</sup> Thirty-one specimens.

<sup>c</sup> Seventeen specimens.

cimo; La Estrella de Cartago) to western Panamá (Volcan de Chiriquí, 7,000 ft.; Cordillera de Tolé; Cordillera del Chucu).

*Chloronerpes sanguinolentus* SCLATER, Proc. Zool. Soc. Lond., May, 1859, 60, pl. 151 (Omoa, Honduras; coll. Derby Mus.); Ann. and Mag. N. H., 3d ser., vi, 1860, 80.—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 112.—SCLATER and SALVIN, Ibis, 1859, 136 (Omoa).

[*Chloronerpes*] *sanguinolentus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99.

*Mesopicus sanguinolentus* MALHERBE, Mon. Pict., ii, 1862, 76; iii, 1862, pl. 43 bis, fig. 6.

(?)*P[haeonerpes]* *sanguinolentus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 140.

*Picus sanguinolentus* SUNDEVALL, Consp. Av. Picin., 1866, 35 (Honduras).

*Dendrobates sanguinolentus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 346.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 439 (Omoa, Honduras; Santo Domingo, Chontales, and Rio Escondido, Nicaragua).

*Veniliornis sanguinolentus* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 205.

[*Veniliornis*] *sanguinolentus* SHARPE, Hand-list, ii, 1900, 221.

*Chloronerpes oleagineus* (not *Picus oleaginus* Lichtenstein) SALVIN and SCLATER, Ibis, 1860, 400 (Choctum, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 131 (Barranca and Turrialba, Costa Rica).—FRANTZTUS, Journ. für Orn., 1869, 364 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 452 (Yucatan).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Anal. Mus. Nac. Costa Rica, i, 1887, 124 (Barranca).

*Chloronerpes oleaginus* BOUCARD, Liste Ois. récol. Guat., 1878, 27.

*Dendrobates oleaginus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 344, part (Tizimin, Yucatan).

*Mesopicus caboti* MALHERBE, Mon. Pict., ii, 1862, 53 ("Nouvelle-Grenade?"); iii, 1862, pl. 57, figs. 1, 2.

*Chloronerpes caboti* SCLATER, Cat. Am. Birds, 1862, 337 (Choctum, Guatemala).—SALVIN, Ibis, 1866, 206 (Choctum; crit.); Proc. Zool. Soc. Lond., 1867, 157 (Cordillera de Tolé, Panama; crit.); 1870, 212 (Cordillera del Chucu, Panama).—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 113.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23; Proc. U. S. Nat. Mus., viii, 1885, 111; Anal. Mus. Nac. C. R., i, 1887, 124 (Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 476 (Jiménez, Costa Rica; descr. young male).

*Chloronerpes caboti*? RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 476 (Jimenez, Costa Rica; descr. immature male).

[*Chloronerpes*] *caboti* GRAY, Hand-list, ii, 1870, 200, no. 8809.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99.

*P[haeonerpes]* *caboti* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 139.

*Picus caboti* SUNDEVALL, Consp. Av. Picin., 1866, 35.

*Dendrobates caboti* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 344 (Teapa, Tabasco; Savana Grande, sources Rio de la Pasion, Choctum, and Retalhuleu, Guatemala; Orange Walk, Brit. Honduras; Costa Rica; Veragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 438.

*Eleopicus caboti* RICHMOND, Proc. U. S. Nat. Mus., xvi, no. 947, Oct. 4, 1893, 519 (Rio Escondido, Nicaragua).

*Veniliornis caboti* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 205.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 34 (Volcan de Chiriqui, Panama, 7,000 ft.); Bull. Mus. Comp. Zool., xxxix, 1903, 146 (Yaruca, Honduras).—COLE, Bull. Mus. Comp. Zool., i, 1906, 130 (Chichen-Itza, Yucatan).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 92 (San José, Guatemala; Los Amates, Guatemala?).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 589 (Costa Rica).

[*Veniliornis*] *caboti* SHARPE, Hand-list, ii, 1900, 221.

## VENILIORNIS KIRKII DARIENENSIS Ridgway.

## DARIÉN WOODPECKER.

Similar to *V. k. continentalis*,<sup>a</sup> but wing-coverts without yellowish spots or streaks, and under parts more narrowly barred, the paler bars pale brownish buff instead of dull buffy white; similar also to *V. k. cecilia*,<sup>a</sup> but back, etc., brighter, more tawny, and under parts more broadly barred with pale brownish buff (instead of dull whitish), and slightly smaller.

*Adult male*.—Pileum dusky, the feathers broadly tipped with bright crimson (more poppy red or vermilion posteriorly), the anterior portion of forehead and the nasal tufts plain brown; hindneck deep saffron or indian yellow; back, scapulars, and wings bright olive-tawny, the wing-coverts (sometimes back also) slightly tinged or touched with red; rump and upper tail-coverts bright poppy red; tail brown, the middle rectrices extensively blackish distally and sometimes broadly but indistinctly banded with the same basally, the lateral rectrices broadly barred or banded with darker; loreal region, anterior portion of malar region, chin, and upper throat plain pale buffy brownish, the auricular region deeper grayish brown (nearly broccoli brown), finely and indistinctly streaked with paler; under parts pale brownish buffy, very regularly barred with dark grayish brown (nearly hair brown), the darker bars decidedly broader than the buffy ones on chest, elsewhere about as wide or (on flanks) slightly narrower; under wing-coverts buffy white, sparsely but rather broadly barred with dusky, those along edge of wing largely deep grayish brown; inner webs of remiges dusky broadly barred or spotted with pale dull buff or dull buffy whitish; bill light horn color, darker toward culmen; iris dark reddish brown;<sup>b</sup> feet dull grayish (in dried skins); length (skins), 143; wing, 83–85 (84); tail, 52–54 (53); exposed culmen, 18.5–20.5 (19.5); tarsus, 15.5; outer anterior toe, 11.5–12.5 (12).<sup>c</sup>

Eastern Panamá (El Real, Darién); western Ecuador (Guayaquil).

<sup>a</sup> See p. 188.

<sup>b</sup> According to Heyde and Lux.

<sup>c</sup> Two specimens, one from El Real, Darien, the other from Guayaquil, western Ecuador. These compare in measurements as follows:

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
No. 150795, coll. U. S. Nat. Mus., El Real, Darién, Panamá (type).....	83	52	18.5	15.5	11.5
No. 54972, coll. U. S. Nat. Mus., Guayaquil, Ecuador.....	85	54	20.5	15.5	12.5

The two specimens are practically identical in coloration.



- (?) *Chloronerpes ceciliae*? (not *Mesopicos ceciliae* Malherbe?) SCLATER, Proc. Zool. Soc. Lond., 1860, 286 (Bababoyo, w. Ecuador), 297 (Esmeraldas, w. Ecuador).  
 (?) *Chloronerpes ceciliae* BERLESPCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 571 (Chimbo, w. Ecuador).—SALVADORI and FESTA, Boll. Mus., Zool., etc., Torino, xv, 1900, 15 (Foreste del Rio Peripa, w. Ecuador).  
*Veniliornis kirkii darienensis* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 33 (El Real, Darien, eastern Panama; coll. U. S. Nat. Mus.).

**VENILIORNIS KIRKII NEGLECTUS (Bangs).**

**DIVALA WOODPECKER.**

Similar to *V. k. darienensis*, but under parts much darker, the darker bars broader and the paler ones narrower, both relatively and absolutely.

*Adult male*.—Length (skins), 133–160 (147); wing, 83–86 (84.6); tail, 45–54 (49.8); culmen, 18–22 (20.6); tarsus, 15–16 (15.5); outer anterior toe, 11.5–13.5 (12.8).<sup>a</sup>

*Adult female*.—Length (skins), 131–151 (142); wing, 82–85 (83.1); tail, 47–53.5 (50.2); culmen, 18.5–20 (19); tarsus, 15–16 (15.4); outer anterior toe, 12–13 (12.3).<sup>b</sup>

Southwestern Costa Rica (Pozo del Rio Grande; El Pozo de Térraba; Palmár), through western and middle Panamá (Divala; David; Mina de Chorchá; Bibaláz) to eastern Panamá (Cana, Darién, 1,800–2,000 feet).

*Chloronerpes ceciliae* (not *Mesopicos ceciliae* Malherbe) SCLATER, Proc. Zool. Soc. Lond., 1856, 143 (David, Chiriquí, w. Panama).

*Chloronerpes ceciliae* SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (David, Panama); 1870, 213 (Mina de Chorchá, Veragua, w. Panama).

<sup>a</sup> Eight specimens.		<sup>b</sup> Five specimens.			
Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
<b>MALES.</b>					
Five adult males from s. w. Costa Rica.....	84.1	48.7	20	15.3	11.9
Three adult males from e. Panama (Cana, Darien).....	85.3	51	21.5	15.8	13
<b>FEMALES.</b>					
Two adult females from s. w. Costa Rica.....	82.7	49	18.7	15	12.7
One adult female from w. Panama (Divala, Chiriquí).....	84	53.5	20	15.5	12
Two adult females from e. Panama (Cana, Darien).....	83.1	50.2	19	15.4	12.3

I have not been able to make direct comparison between the specimens from Cana, Darien, and those from Costa Rica and western Panama, the latter having been borrowed from other museums and returned before the former were received. They differ markedly, however, in coloration from the type of *V. k. darienensis*, and according to my recollection of the series of typical *V. k. neglectus* agree very closely with the latter. The type of *V. k. darienensis* was obtained, as stated on the label, in the low damp (probably coast-plain) forests of the Rio Pirrí, whereas the Cana examples of *V. k. neglectus* were taken in the mountains at an elevation of 1,800–2,000 feet; hence they doubtless represent, respectively, lowland and mountain forms.

- [*Chloroncrpes*] *ceciliae* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.  
*Dendrobates ceciliae* HARGITT, Cat. Birds Brit. Mus., xvi, 1890, 366, part (Mina de Chorchá and Bibaláz, Panama).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 46 (Palmár, s. w. Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1890, 440, part (David, Bibaláz, and Mina de Chorchá, Panama).  
 [Veniliornis] *ceciliae* SHARPE, Hand-list, ii, 1900, 222, part (Panama).  
*Veniliornis ceciliae* BANGS, Auk, xviii, 1901, 360 (Divala, Chiriquí, w. Panama).  
*Veniliornis neglectus* BANGS, Proc. New Engl. Zool. Club, ii, Dec. 30, 1901, 99, Divala, Chiriquí, w. Panama; coll. E. A. and O. Bangs; Auk, xxiv, 1907, 293 (Pozo del Río Grande, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 589 (Costa Rica).

### Genus DRYOBATES Boie.

- Dendrocopos* (not *Dendrocopus* Vieillot, 1816) KOCH, Baier Zool., i, 1816, 72. (Type, *Picus major* Linnæus.)  
*Dryobates* BOIE, Isis, xxi, 1826, 977. (Type, by monotypy, *Picus pubescens* Linnæus.)  
*Dendrodromas* KAUP, Naturl. Syst., 1829, 136. (Type, *Picus leuconotos* Bechstein.)  
*Leuconotopicus* MALHERBE, Rev. Zool., 1845, 373. (Type, *Picus stricklandi* Malherbe.)  
*Pipripicus* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8). (Type, *Picus leuconotos* Bechstein.)  
*Piculus* (not of Geoffroy St.-Hilaire, 1832) BREHM, Vollst. Vogelf., 1855, 70. (Type, *Picus minor* Linnæus.)  
*Tridactylia* (not of Shaw, 1815) BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8). (Type, *Picus lecontei* Jones=*P. pubescens* Linnæus.)  
 (?) *Dendrotypes* CABANIS and HEINE, Mus. Hein., iv, heft 2, June, 1863, 46. (Type, *Picus macei* Vieillot.<sup>a</sup>)  
*Xylocopus*<sup>b</sup> CABANIS and HEINE, Mus. Hein., iv, heft 2, June, 1863, 51. (Type, *Picus minor* Linnæus.)  
*Dendrocoptes* CABANIS and HEINE, Mus. Hein., iv, heft 2, June, 1863, 51. (Type, *Picus medius* Linnæus.)

Rather large to very small Picinæ (wing 90–150 mm.) with outer hind toe decidedly longer than outer front toe, longest primaries exceeding secondaries by more than one-fourth (but less than one-third) the length of wing, outermost (tenth) primary about one-third as long as ninth, culmen longer (usually much longer) than outer hind toe with claw (or else with tuft of antrorse prefrontal plumes covering basal half of maxilla); outer webs of primaries (at least) spotted with white, lateral rectrices white (with or without black bars or spots), upper parts black or (rarely) brown, often barred or striped with white on back, under parts whitish, with or without darker markings.

Bill usually shorter (sometimes very much shorter) than head, rarely slightly longer, distinctly chisel-shaped at tip, its width at

<sup>a</sup> This species I have not been able to examine.

<sup>b</sup> ξύλον (Holz) und κόπτω (schlagen, klopfen). (Cabanis and Heine.)

anterior end of nostrils about equal to its depth at same point; culmen straight or very faintly convex, sharply ridged; gonys twice as long as mandibular rami, or slightly more, more or less distinctly ridged, straight or very nearly so; supranasal ridge and prenasal groove very distinct, parallel with culmen, running out to (or toward) edge of maxilla at a point less than one-third to a little more than one-third the distance from tip to base of tomium. Nostril small, longitudinally elliptical or linear (sometimes more pointed anteriorly), situated nearer to tomium than to culmen, completely covered by a conspicuous antrorse tuft of hair-like, bristly-tipped prefrontal feathers. Feathers of malar apex and chin antrorse, bristle-tipped, the latter covering base of gonys. Orbital region partly naked, the margin of lower eyelid and posterior portion of upper eyelid clothed with minute feathers. Wing rather long, the longest primaries exceeding secondaries by more than one-fourth (but less than one-third) the length of wing; sixth and seventh, sixth, seventh and eighth, or seventh and eighth primaries longest, the ninth much shorter than fifth (sometimes a little shorter than fourth), the tenth (outermost) about one-third as long as ninth. Tail nearly two-thirds as long as wing, the rectrices broad, the middle ones more or less strongly decurved terminally and with tip gradually short-acuminate. Tarsus longer than outer hind toe with claw (except in *D. scalaris*, *D. nuttallii*, *D. stricklandi*, and *D. arizonæ*), feathered in front for at least upper third; outer hind toe much longer than outer front toe.

*Coloration*.—(1) General color of upper parts black, the scapulars or lower back, spots on primaries (sometimes secondaries and wing-coverts also), auricular and orbital regions white; posterior under parts red or tinged with red; adult males with pileum or a nuchal band red. (*D. major*, *D. medius*, *D. minor*, *D. leucotus*, and other Palearctic species.)

(2) Above black with a white stripe down back, the primaries (sometimes also secondaries and wing-coverts) spotted with white; auricular region black, with a white stripe above and below; posterior under parts white or light brownish, like anterior portions; adult males with a red nuchal band. (*D. villosus* and *D. pubescens* groups.)

(3) Similar to section 2 but the black replaced by brown (one species without white on back) and under parts spotted with black. (*D. stricklandi* and *D. arizonæ*.)

(4) Similar to section 2 but back barred with white and black, lateral and posterior under parts spotted with black, the adult males with occiput as well as nape red, the crown streaked or speckled with white. (*D. scalaris* and *D. nuttallii* groups.)



*Range*.—Palæarctic and Nearctic Regions; south in America to Panamá. (More than fifty species and subspecies.<sup>a</sup>)

KEY TO THE SPECIES AND SUBSPECIES OF DRYOBATES.

- a. Back with a broad longitudinal median stripe of white, or at least without regular bars; black auricular patch confluent posteriorly with black of hindneck.
- b. Larger (wing more than 108, or else underparts smoky brown; exposed culmen 21 or more). (*Dryobates villosus*.)
- c. Middle wing-coverts heavily spotted with white; greater coverts with a large subbasal (concealed) spot of white; all the secondaries spotted (in transverse series) with white. (Eastern and northern forms.)
- d. Larger (averaging: wing more than 130, tail more than 83, exposed culmen more than 31 mm.). (Northern North America east of Rocky Mts., chiefly north of United States.)

***Dryobates villosus septentrionalis* (p. 210).**

- dd. Smaller (averaging: wing less than 121, tail less than 75, exposed culmen less than 30 mm.).
- e. Larger (averaging: Male, wing 120.4, tail 71.4, exposed culmen 29.2; female, wing 119.9, tail 74.2, exposed culmen 27.3); under parts more purely white, and white markings of upper parts averaging rather larger. (Middle districts of eastern North America, from more southern British Provinces to northern border of Lower Austral Zone.)

***Dryobates villosus villosus* (p. 201).**

- ee. Smaller (wing averaging less than 114).
- f. Wing longer (averaging 113.8 in male, 112.2 in female); loreal region largely black; adult male with red nuchal patch narrower, usually interrupted medially by a black stripe from occiput to hindneck. (Lower Austral Zone of eastern United States.)

***Dryobates villosus audubonii* (p. 206).**

- ff. Wing shorter (averaging less than 108 in male, less than 105 in female); loreal region wholly or mostly white; adult male with red nuchal patch broader, not interrupted medially.
- g. Sides of breast heavily streaked with black; lateral rectrices without black spots on inner web. (Islands of New Providence and Andros, Bahamas.).....***Dryobates villosus maynardi* (p. 208).**
- gg. Sides of breast with few if any black streaks; lateral rectrices usually with one or more black spots on inner web. (Islands of Abaco, Little Abaco, and Great Bahama, Bahama.)

***Dryobates villosus piger* (p. 209).**

- cc. Middle wing-coverts wholly black, or with much fewer or smaller white spots; greater coverts without any sub-basal (concealed) white spot, often wholly black; inner secondaries without white spots, those on distal secondaries and primaries reduced in size. (Western and Middle American forms, except one.)
- d. Underparts essentially white.
- e. Underparts pure white.
- f. White of back more restricted, more or less broken by black streaking or spotting; lateral rectrices frequently with one or more black spots on distal portion; flanks often spotted or broadly streaked with blackish. (Slightly smaller than *D. v. monticola*.) (Newfoundland.)

***Dryobates villosus terrænovæ* (p. 211).**

<sup>a</sup> Most of the Old World species generally referred to this genus have not been examined in the preparation of the above generic description, which is based on all the American species and *D. major*, *D. leucotus*, *D. medius*, and *D. minor* only of the Old World forms.

- ff.* White of back more extended, unbroken; lateral rectrices never with black spots, and flanks never distinctly (if at all) spotted or streaked.
- g.* Larger (wing averaging 133.3 in male, 131.1 in female). (Rocky Mt. district, from British Columbia to northern New Mexico.)

***Dryobates villosus monticola*** (p. 212).

- gg.* Smaller (wing averaging 126.3 in male, 123.6 in female). (Extreme western Texas, New Mexico and Arizona, except extreme southern portion, and southern Utah.)

***Dryobates villosus leucothorectis*** (p. 214).

- ee.* Underparts not pure white.

- f.* Larger (wing averaging 129.1 in male, 126.3 in female). (Sierra Nevada district of California, Oregon, Washington, and Nevada.)

***Dryobates villosus orius*** (p. 215).

- ff.* Smaller (wing averaging 122.6 in male, 120.1 in female). (Northern Lower California, southern California, and coast district of middle California, north to Mendocino Co.)

***Dryobates villosus hyloscopus*** (p. 217).

- dd.* Underparts not white (pale brownish gray to deep smoky brown).

- e.* Underparts drab-grayish or buffy grayish.

- f.* Larger (wing averaging 124 or more, tail 77 or more); under parts deeper smoke-gray or drab gray.

- g.* Pale grayish or whitish of back not usually broken into spots or irregular bars; flanks not heavily, if at all spotted with black; lateral rectrices without black bars or spots.

- h.* Under parts darker and grayer or more smoky; white of back more strongly tinged with gray; wing-coverts less often spotted; nasal tufts usually dull whitish or grayish. (Northwest coast district, from Humboldt Co., California, to British Columbia.)

***Dryobates villosus harrisi*** (p. 218).

- hh.* Under parts paler (often nearly white) and more buffy; white of back less tinged with gray (often not at all); wing-coverts more often spotted; nasal tufts usually strongly buffy or tawny. (Southeastern coast of Alaska, including Alexander Archipelago.)

***Dryobates villosus sitkensis*** (p. 220).

- gg.* Pale grayish or whitish of back broken into spots or irregular bars; flanks heavily spotted with black; lateral rectrices usually broadly barred or spotted with black. (Queen Charlotte Islands, British Columbia.).....***Dryobates villosus picoideus*** (p. 220),

- ff.* Smaller (wing averaging less than 124, tail less than 75); underparts paler smoke-gray, drab-gray, or buffy gray.

- g.* Larger (wing averaging 123.5 in male, 123.3 in female); underparts slightly paler. (Southwestern New Mexico, southern Arizona, and southward to Durango, Zacatecas, and Coahuila.)

***Dryobates villosus icastus*** (p. 221).

- gg.* Smaller (wing averaging 120.7 in male, 118.2 in female); underparts slightly darker. (Middle-eastern portion of Mexican plateau, in States of San Luis Potosí and southern Tamaulipas.)

***Dryobates villosus intermedius*** (p. 222).

- ee.* Underparts decidedly brownish.

- f.* Larger (averaging: wing 117.7 in male, 114.6 in female, tail 71.5 in male, 69.5 in female); underparts more grayish brown. (Highlands of southern Mexico, in States of Vera Cruz, Puebla, Mexico, Morelos, Oaxaca, Guerrero, Michoacán, and Jalisco.)

***Dryobates villosus jardinii*** (p. 223).

- ff.* Smaller (averaging: wing less than 110 in male, less than 106 in female, tail less than 64 in male, less than 61 in female); underparts less grayish brown.
- g.* Underparts darker brown.
- h.* Larger (wing averaging 109.4 in male, 104.6 in female, tail 63.9 in male, 60.9 in female). (Guatemala and State of Chiapas, southern Mexico.).....***Dryobates villosus sanctorum*** (p. 225).
- hh.* Smaller (wing averaging 102.8 in male, 102.1 in female, tail 58.6 in male, 58.4 in female). (Highlands of Costa Rica and western Panamá.).....***Dryobates villosus extimus*** (p. 226).
- gg.* Underparts paler brown (size of *D. v. sanctorum*). (Highlands of northern Nicaragua.).....***Dryobates villosus fumeus*** (p. 226).
- bb.* Smaller (wing less—usually much less—than 106, the underparts pure white to dull white); exposed culmen not more, usually much less, than 18 mm. (*Dryobates pubescens*.)
- c.* Middle wing-coverts heavily spotted with white; greater coverts with a large sub-basal (concealed) spot of white; all the secondaries spotted (in transverse series) with white. (Eastern and northern forms.)
- d.* Smaller (averaging: wing 88.6 in male, 88.7 in female, tail 50.5 in male, 51.6 in female); underparts dull white. (Lower Austral Zone of Eastern United States.).....***Dryobates pubescens pubescens*** (p. 228).
- dd.* Larger (averaging: wing more than 94, tail more than 55); underparts pure white.
- e.* Smaller (averaging: wing 94.1 in male, 94.7 in female, tail 55.8 in male, 56.4 in female). (Middle districts of eastern North America, in Upper Austral and Transition life-zones; Kodiak Island, Alaska?)  
***Dryobates pubescens medianus*** (p. 233).
- ee.* Larger (averaging: wing 99.1 in male, 98.8 in female, tail 63.1 in male, 63.3 in female). (Northern North America, east of Rocky Mts., north to Mackenzie and Yukon, west to west coast of Alaska; south in winter to extreme northern United States.)  
***Dryobates pubescens nelsoni*** (p. 235).
- cc.* Middle wing-coverts wholly black or with much fewer or smaller white spots; greater coverts without any sub-basal (concealed) white spot, often wholly black; inner secondaries without transverse white spots, and spots on other remiges reduced in size. (Western forms.)
- d.* Under parts pure white; larger (wing averaging 99.3 in male, 100.9 in female, tail 62.3 in male, 63.9 in female). (Rocky Mountain district, from British Columbia to New Mexico and Arizona; during migration, west to eastern California, etc., east to eastern Montana, western Nebraska, etc.)  
***Dryobates pubescens homorus*** (p. 236).
- dd.* Under parts not pure white; smaller (wing averaging less than 98, tail less than 62).
- e.* Larger (averaging wing 96 in male, 97.2 in female); inner secondaries with rounded spots of white; middle wing-coverts spotted with white; under parts grayish white. (Coast district of southern Alaska, from Kenai Peninsula to Taku River.).....***Dryobates pubescens glacialis*** (p. 239).
- ee.* Smaller (averaging wing less than 96 in male, less than 93 in female); inner secondaries and middle coverts usually without white spots; under parts brownish white to light brownish gray or drab.
- f.* Under parts light brownish gray or drab; slightly larger (averaging wing 95.1 in male, 92.8 in female). (Northwest coast district, from southern British Columbia to northern California.)  
***Dryobates pubescens gairdnerii*** (p. 241).



- ff.* Under parts dull white or brownish white; slightly smaller (averaging wing 92.6 in male, 92.2 in female). (California, except northern coast district and southeastern desert mountains.)

***Dryobates pubescens turati* (p. 239).**

- aa.* Back regularly barred with black (or dark brown) and white, or else wholly uniform brown; black or dark brown auricular area not confluent with same color of hindneck.
- b.* Scapulars (as well as interscapulars) barred with black and white.
- c.* Forehead black, abruptly contrasted with white or dull buffy of nasal tufts; general color of under parts (normally) pure white; adult male with whole crown black (sometimes streaked, not spotted, with white). (Southwestern Oregon, through California, to northwestern Lower California.)

***Dryobates nuttallii* (p. 242).**

- cc.* Forehead smoky brownish (more or less dark), not strongly contrasted with similar but usually paler color of nasal tufts; general color of under parts dull brownish white to broccoli brown or drab; adult male with crown spotted with red and white. (*Dryobates scalaris*.)
- d.* Smaller (wing averaging less than 98 in male, less than 96 in female).
- e.* Larger (wing averaging more than 94 in male, more than 92 in female).
- f.* Lateral under parts spotted; posterior under parts more heavily barred; outer web of lateral (developed) rectrix usually broadly barred on proximal half.
- g.* Under parts less numerously spotted, the median portion of chest with few if any markings; bill larger (exposed culmen averaging 20.2 in male, 18.5 in female). (Middle and northern Vera Cruz, southern Tamaulipas, and southern San Luis Potosí.)

***Dryobates scalaris scalaris* (p. 245).**

- gg.* Under parts more numerously spotted, the whole chest spotted; bill smaller (exposed culmen averaging 18.8 in male, 17.3 in female). (State of Chiapas.).....***Dryobates scalaris percus* (p. 248).**
- ff.* Lateral under parts streaked; posterior under parts less heavily barred (usually spotted); outer web of lateral rectrix with proximal half unbarred.
- g.* Smaller (averaging: wing 94.5 in male, 94.6 in female; culmen 20.3 in male, 18.2 in female; tarsus 16.8 in male, 16.3 in female); under parts darker, more smoky. (State of Sinaloa, western Mexico.)

***Dryobates scalaris sinaloensis* (p. 250).**

- gg.* Larger (averaging: wing 97.7 in male, 95 in female; culmen 22.1 in male, 19.3 in female; tarsus 17.4 in male, 17 in female); under parts paler, more buffy. (Tres Marias Islands, western Mexico.)

***Dryobates scalaris graysoni* (p. 250).**

- ee.* Smaller (wing averaging less than 93 in male, less than 89 in female).
- f.* Outer web of lateral rectrix with proximal half distinctly barred with black.
- g.* White bars on back, etc., broader (decidedly wider than black ones); black bars on lateral rectrices narrower; wing slightly longer (averaging 90.7 in male, 88 in female). (Coast district of southern Vera Cruz.)
- Dryobates scalaris ridgwayi* (p. 247).**
- gg.* White bars on back, etc., narrower (narrower than black ones); black bars on lateral rectrices broader; wing slightly shorter (averaging 89.1 in male, 87 in female). (Yucatan.)

***Dryobates scalaris parvus* (p. 248).**

- ff.* Outer web of lateral rectrix with proximal half unbarred.
- g.* Smaller (wing averaging 86.8 in male, 84 in female; tail 45.8 in male, 44 in female); black bars on distal portion of lateral rectrices broader. (British Honduras.).....***Dryobates scalaris leucoptilurus*** (p. 249).
- gg.* Larger (wing 92, tail 48.5, in male); black bars on distal portion of lateral rectrices narrower. (State of Michoacan, southwestern Mexico.).....***Dryobates scalaris azelus*** (p. 251).
- dd.* Larger (wing averaging more than 100 in male, more than 96 in female).
- e.* Outer web of lateral rectrix with proximal half unbarred; black bars on back, etc., not wider than white ones, or else (*D. s. lucasanus*, *D. s. eremicus*) the posterior under parts less heavily barred.
- f.* Smaller (wing averaging 100.8 in male, 96.8 in female). (Southern Sonora.).....***Dryobates scalaris agnus*** (p. 252).
- ff.* Larger (wing averaging 102 or more in male, more than 99 in female).
- g.* Smaller (wing averaging 102 in male, 99.2 in female; tail 63 in male, 63.8 in female; exposed culmen 24.5 in male, 20.5 in female); under parts paler. (Southern Lower California.)  
***Dryobates scalaris lucasanus*** (p. 252).
- gg.* Larger (wing averaging 106.6 in male, 101.4 in female; tail 68 in male, 66.9 in female; exposed culmen 26.9 in male, 23.9 in female); under parts darker. (Northwestern Lower California.)  
***Dryobates scalaris eremicus*** (p. 253).
- ee.* Outer web of lateral rectrix usually distinctly barred on proximal half.
- f.* Posterior under parts less heavily barred; black bars on back, etc., not wider than white ones.
- g.* Black bars on back, etc., not narrower than white ones.
- h.* Larger (wing averaging 104 in male, 101.5 in female; tail 60.8 in male, 62.4 in female; exposed culmen 22.7 in male, 19.8 in female); under parts paler. (Extreme western Texas to southern California and extreme northern Lower California, north to southern Nevada and Utah, and south to northern Durango.)  
***Dryobates scalaris cactophilus*** (p. 254).
- hh.* Smaller (wing averaging 102.1 in male, 99.6 in female; tail 57.7 in male, 56.9 in female; exposed culmen 20.9 in male, 17.5 in female); under parts darker. (States of Jalisco, southern Durango, Zacatecas, and northwestern Michoacan, western Mexico.)  
***Dryobates scalaris centrophilus*** (p. 256).
- gg.* Black bars on back, etc., narrower than white ones. (Size of *D. s. centrophilus*.) (Texas, Nuevo Leon, northern and middle Tamaulipas, and north to southeastern Colorado.)  
***Dryobates scalaris symplectus*** (p. 257).
- ff.* Posterior under parts more heavily barred; black bars on back, etc., wider than white ones. (Size of *D. s. cactophilus*.) Southeastern part of Mexican plateau in San Luis Potosí, Guanajuato, Puebla, Hidalgo, etc.).....***Dryobates scalaris bairdi*** (p. 258).
- bb.* Scapulars uniform brown.
- c.* Median portion of back and rump broadly barred or transversely spotted with white. (Southeastern Mexico, in States of Vera Cruz, Puebla, Mexico, and Morelos.).....***Dryobates stricklandi*** (p. 259).
- cc.* Whole back and rump uniform brown. (*Dryobates arizonæ*.)

- d. Larger (averaging: wing 117.3 in male, 113.2 in female; exposed culmen 27.2 in male, 24.1 in female); under parts averaging less heavily spotted and white spots on outer webs of primaries larger. (Southern Arizona and southwestern New Mexico southward through Sonora and Chihuahua to Durango.).....**Dryobates arizonæ arizonæ** (p. 261).
- dd. Smaller (averaging: wing 108.9 in male, 108 in female; exposed culmen 23.6 in male, 20.8 in female); under parts averaging more heavily spotted and white spots on outer webs of primaries smaller, sometimes obsolete. (Southwestern Mexico, in States of Sinaloa, Jalisco, Colima, and Zaca-tecas and Territory of Tepic.)....**Dryobates arizonæ fraterculus** (p. 263).

**DRYOBATES VILLOSUS VILLOSUS (Linnæus).**

**HAIRY WOODPECKER.**

*Adult male*.—Pileum uniform glossy blue-black; a nuchal band of bright poppy red or scarlet, usually interrupted in middle portion by an extension of the black of pileum; rest of upper parts black, the median portion of back (broadly) white, the wings (including middle coverts) spotted with white, the spots on greater coverts and remiges arranged in regular transverse series; two lateral rectrices, on each side (including outermost rudimentary rectrix), entirely white, the third white except basal portion of inner web, the fourth with greater part of outer web and distal portion of inner web white;<sup>a</sup> nasal tufts dull white to dull brownish yellow, the bristly shafts blackish; a broad white supra-auricular stripe, narrower anteriorly, where extending over eye (sometimes confluent with whitish of nasal tufts); a broad white suborbital-subauricular stripe, anteriorly confluent with whitish or dull yellowish of nasal tufts, posteriorly extending to sides of neck; between these two white stripes a broad black stripe involving whole of auricular region and part of suborbital region, posteriorly confluent with black of hindneck; a black malar stripe (usually more or less broken anteriorly by admixture of white), continued and gradually widening, posteriorly, where confluent with a lateral extension of the black of hindneck, and also sending off a short branch along side of chest; underparts immaculate white; bill deep grayish horn color, the mandible slightly paler; iris reddish brown (claret brown to burnt umber); legs and feet dull grayish blue, bluish gray or grayish olive; length (skins), 184–228 (220); wing, 114.5–124 (120.4); tail, 65–77 (71.4); exposed culmen, 27–33 (29.2); tarsus, 21–23 (21.9); outer anterior toe, 13–15.5 (14.4).<sup>b</sup>

*Adult female*.—Similar to the adult male but without any red on head; length (skins), 185–231 (206); wing, 115–128 (119.9); tail,

<sup>a</sup> The terminal portion of these white rectrices usually stained, more or less deeply, with brown or tawny (from contact with decayed wood?).

<sup>b</sup> Twenty-five specimens, from New York, Pennsylvania, Maryland, District of Columbia, northern Virginia, and eastern Tennessee.



68.5-83 (74.2); exposed culmen, 25-30 (27.3); tarsus, 20-23 (21.1); outer anterior toe, 13-15 (14).<sup>a</sup>

<sup>a</sup> Twenty-four specimens, from Ontario, New York, Pennsylvania, Maryland, District of Columbia, northern Virginia, eastern Tennessee, and northern Illinois.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Eleven adult males from Yukon, Mackenzie, etc. ( <i>D. v. septentrionalis</i> ).....	132.3	83.3	36	23.6	15.3
Two adult males from Maine, June ( <i>D. v. septentrionalis</i> ?).....	129.5	82	31.2	22	15
Four adult males from New Brunswick, October, November ( <i>D. v. villosus</i> ?).....	125.1	82.7	31.1	23	14.2
One adult male from Nova Scotia, October ( <i>D. v. villosus</i> ?).....	122.5	77	31.5	23	14
One adult male from Ontario, November ( <i>D. v. septentrionalis</i> ?).....	129	82	32	24	16
Two adult males from North Dakota, November ( <i>D. v. villosus</i> ).....	125.3	78.5	31	21.7	14.5
Six adult males from New York, March, July, August ( <i>D. v. villosus</i> ).....	121.3	74	29.5	21.8	14.5
Three adult males from mountains of Pennsylvania, June, July ( <i>D. v. villosus</i> ).....	122.3	73	30	22.2	14.5
Seven adult males from lowlands of Pennsylvania, March, May, December ( <i>D. v. villosus</i> ).....	119.6	70.3	28.2	22.2	14.6
Five adult males from Maryland and District Columbia, April, June, September, October ( <i>D. v. villosus</i> ).....	119.9	70	30.4	21.5	14.5
One adult male from northern Virginia, August ( <i>D. v. villosus</i> ).....	118.5	70	30	21.5	14
One adult male from southeastern Virginia (Dismal Swamp), June ( <i>D. v. audubonii</i> ?).....	117	75	30.5	20.5	13
One adult male from southwestern Indiana, April 30 ( <i>D. v. audubonii</i> ?).....	115.5	69.5	27.5	22	14
One adult male from southeastern Illinois, spring ( <i>D. v. audubonii</i> ?).....	116	70	28.5	21.5	13.5
One adult male from eastern-central North Carolina, May ( <i>D. v. villosus</i> ).....	119.5	-----	31	20.5	13
One adult male from northwestern South Carolina, June ( <i>D. v. villosus</i> ?).....	116	72.5	30.5	21	14
One adult male from eastern Tennessee, August ( <i>D. v. villosus</i> ?).....	116.5	-----	28	21.5	14
One adult male from southeastern Missouri, May ( <i>D. v. audubonii</i> ).....	114.5	65.5	28.5	20	13
One adult male from Louisiana, January ( <i>D. v. audubonii</i> ).....	113	68	29	21	14.5
One adult male from Mississippi, May ( <i>D. v. audubonii</i> ).....	113.5	-----	27	20.5	13.5
One adult male from southeastern Georgia, April ( <i>D. v. audubonii</i> ).....	113	67	26.5	21.5	13
Ten adult males from Florida, January, March, April, May, November ( <i>D. v. audubonii</i> ).....	113.9	65.1	28.3	20.6	13.7
FEMALES.					
Eleven adult females from Yukon, Mackenzie, etc. ( <i>D. v. septentrionalis</i> ).....	130.4	84.3	31.3	22.5	14.3
One adult female from North Dakota, November ( <i>D. v. septentrionalis</i> ?).....	127	81	28.5	21.5	14
Three adult females from New Brunswick, August, October, November ( <i>D. v. villosus</i> ?).....	123.3	79.5	28.3	20.7	13.8
Four adult females from Ontario, January, April, June, December ( <i>D. v. villosus</i> ?).....	125.6	81.5	28.6	21.5	14.5
Seven adult females from New York, May-December ( <i>D. v. villosus</i> ).....	120.3	74.2	27.9	21	13.7
Six adult females from Pennsylvania, May-November ( <i>D. v. villosus</i> ).....	116.9	71.1	26.7	21.1	13.8

*Young male*.—Similar to the adult male, but without any red nuchal patch, the crown, however, streaked or spotted with red

Footnote—Continued.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
FEMALES—continued.					
One adult female from northeastern Illinois, September ( <i>D. v. villosus</i> ).....	120.5	72.5	26	22.5	14.5
One adult female from northern Virginia, January ( <i>D. v. villosus</i> ).....	118	68.5	25.5	21	14
One adult female from southwestern Indiana, May ( <i>D. v. villosus?</i> ).....	116	69	26.5	21	14
Two adult females from southeastern Illinois, April ( <i>D. v. audubonii?</i> ).....	114.5	68.5	25.7	21	13.5
One adult female from southeastern Missouri, June ( <i>D. v. villosus</i> ).....	117.5	.....	26	20	13
One adult female from Arkansas, October ( <i>D. v. villosus?</i> ).....	115	64.5	28	20.5	13.5
Four adult females from Louisiana, January, April ( <i>D. v. audubonii</i> ).....	112.7	65.1	25.6	20.2	14.2
One adult female from Mississippi, September ( <i>D. v. audubonii?</i> ).....	115.5	66	26	19	13
Seven adult females from North Carolina January–September ( <i>D. v. audubonii?</i> ).....	115	69.5	26.5	19.9	13.4
Four adult females from South Carolina, March, April, December ( <i>D. v. audubonii</i> ).....	113.5	69	25.5	20.1	13.5
Four adult females from Georgia, February, April ( <i>D. v. audubonii</i> ).....	113.1	66.9	26	22.1	13.4
Eight adult females from Florida ( <i>D. v. audubonii</i> ).....	111.8	64.4	26	19.2	13.1

The above measurements show how difficult it is to subdivide this species satisfactorily into two or more subspecies according to size. The transition from the smallest specimens, found in Florida and along the Gulf coast to Texas, to the largest, found in Mackenzie and Yukon, is so very gradual and the attendant change in coloration so very slight that subdivision with definite characters is practically impossible. The difference in size between extreme northern and southern specimens is very great, but it is almost impossible to satisfactorily define subspecies, whether only two or several, or to satisfactorily limit their respective ranges. The difficulty is enhanced by the lack of anything like adequate material; for, the species being more or less migratory over much the greater part of its range, comparison of specimens should be restricted to those taken in or near the breeding season, possible migrants being eliminated. Unfortunately a great majority of the specimens in collections are winter, late fall, or early spring birds, and therefore are of only secondary use for the purpose in view. The value of measurements of the wing and tail is greatly vitiated if both winter and summer or late spring specimens are included together, since there is considerable difference owing to abrasion of the tips of the remiges and rectrices. Besides exercising care in these matters, it is necessary also to separate specimens from different faunal areas within a given State, for there is much difference in size between birds from the coast lowlands and those from the interior mountainous districts of Pennsylvania, Maryland, Virginia, and the Carolinas, for instance, as also between those from eastern and western Tennessee and Kentucky, southern and northern Indiana and Illinois, etc.

The author admits his inability to offer a satisfactory treatment of the subject, which can only be done when the necessary material can be brought together.

The case is quite the same as that affecting *D. pubescens*, *Colaptes auratus*, *Phlæotomus pileatus*, and other birds which undergo a gradual increase of size from Florida and the Gulf coast northward, without accompanying material change in coloration

(usually more or less pale—sometimes pale yellowish or pinkish), the reddish or yellowish tips to the feathers often preceded by a small spot or streak of white; black parts of plumage duller.

*Young female*.—Similar to the young male, but without any reddish or yellowish on crown, which, however, is sometimes minutely streaked or spotted with whitish.

Middle districts of eastern United States and adjacent portions of Canada (Upper Austral and Transition and southern edge of Canadian life zones); north to New Brunswick, Nova Scotia, Ontario, Michigan, Wisconsin, Minnesota, etc., south to Maryland, Virginia (except southern coast district?), higher parts of North and South Carolina, Tennessee, etc., West Virginia, Kentucky (except Mississippi lowlands), southern Indiana, Illinois, and Missouri (except lowlands of Mississippi, lower Ohio, and lower Wabash rivers), northwestern Texas (Lipscomb, breeding), etc., west to eastern border of the Great Plains.

(The range of this intermediate form can be stated only in general terms; northward specimens are larger, approaching *D. v. septentrionalis*, especially in Maine; southward it grades into *D. v. audubonii*—the dividing line, in both cases, being practically impossible of exact definition, in fact a matter of arbitrary decision.)

[*Picus*] *villosus* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 175 (New Jersey; based on *Picus varius medius quasi villosus* Catesby, Nat. Hist. Carolina, i, 19; *Picus varius virginianus* Brisson, Orn., iv, 48; etc.).—GMELIN, Syst. Nat., i, pt. i, 1788, 435.—LATHAM, Index Orn., i, 1790, 232.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 374, pl. 638, figs. 4252-4254.—GRAY, Hand-list, ii, 1870, 184, no. 8592, part.—COUES, Key N. Am. Birds, 1872, 193.—D'HAMONVILLE, Cat. Ois. Eur., 1876, 10 (accidental in England).

*Picus villosus* VIEILLOT, Ois. Am. Sept., ii, 1807, 64, pl. 120; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 71, part.—WILSON, Am. Orn., i, 1808, pl. 9, fig. 3.—STEPHENS, Shaw's Gen. Zool., ix, 1815, 171.—BONAPARTE, Ann. Lyc. N. Y., ii, part i, 1826 (Synop. Birds U. S.), 46; Geog. and Comp. List, 1838, 39.—LESSON, Traité d'Orn., 1831, 228.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 575; 2d ed., 1840, 683.—AUDUBON, Orn. Biog., v, 1839, 164, pl. 416; Synopsis, 1839, 179; Birds Am., oct. ed., iv, 1842, 244, pl. 262.—BAIRD, Cat. N. Am. Birds, 1859, no. 74, part.—MALHERBE, Mon. Picid., i, 1861, 75; iii, 1861, pl. 21, figs. 1, 2.—SUNDEVALL, Consp. Av. Picin., 1866, 16.—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 180 (e. Kansas).—HARTING, Man. Brit. Birds, 1872, 122 (accidental in England; 3 records).—COUES, Check List, 1873, no. 298, part; 2d ed., 1882, no. 438, part; Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 615 (Turtle Mt., North Dakota).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 49, figs. 3, 4, 5.—BREWSTER, Ann. Lyc. N. Y., xi, 1875, 144 (Ritchie Co., West Virginia; crit.); Bull. Nutt. Orn. Club, iii, 1878, 179 (descr. young male).—DALGLEISH, Bull. Nutt. Orn. Club, v, 1880, 73 (accid. in England).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188; Nom. N. Am. Birds, 1881, no. 360.

[*Picus*] *villosus* BONNATERRE and VIEILLOT, Tabl. Enc. Méth., iii, 1823, 1305.—BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 369; Obs. Wilson's Am. Orn., 1826, [30].—WAGLER, Syst. Av., 1827, *Picus*, sp. 27, part.—GRAY,



- Gen. Birds, ii, 1845, 435.—BONAPARTE, Consp. Av., i, 1850, 137.—MAXIMILIAN, Journ. für Orn., 1858, 353 (Allegheny Mts., Ohio, etc.).—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 377, part (Illinois).—COUES, Key N. Am. Birds, 2d ed., 1884, 483.
- [*Picus villosus*.] Var. *villosus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 503.
- Picus (Trichopicus) villosus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvii.
- [*Dryobates*] *villosus* BOIE, Isis, 1828, 326.
- Dryobates villosus* BREWSTER, Auk, iii, 1886, 104 (Black Mts., w. North Carolina, 5,700 ft.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 393.—LANGDON, Auk, iv, 1887, 130 (Chilhowee Mts., e. Tennessee).—RIDGWAY, Orn. Illinois, i, 1889, 376, part.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 46.—SWALES and TAVERNER, Wilson Bull., no. 55, 1906, 65 (Lake Muskoka, Ontario; crit.).—ADAMS, Ecol. Surv. N. Mich., 1906, 115 (Porcupine Mts., n. Michigan, summer).—VISHER, Auk, xxvi, 1909, 148 (w. South Dakota, resident).—COOKE, Auk, xxvi, 1909, 412 (Dry Willow Creek, Yuma Co., Colorado, breeding; Arkansas Valley, w. to Fowler, Colorado).—(?) EMBODY, Auk, xxvii, 1910, 172 (Hanover Co., Virginia, resident).—WOOD and GAIGE, Pub. 4, Mich. Geol. and Biol. Surv., 1911, 286 (Michigan; resident, except on Isle Royale).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 13, pl. 1, upper fig. (food).
- [*Dryobates*] *villosus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 66, part.—RIDGWAY, Man. N. Am. Birds, 1887, 282.
- Dryobates villosus villosus* OBERHOLSER, Notes on Mam. and Summer Birds w. North Carolina, 1905, 14 (breeding on mts. down to at least 5,000 ft.); Proc. U. S. Nat. Mus., xl, 1911, 596, 598 (monogr.).—JENKINS, Auk, xxiii, 1906, 166 (crit.).—SMITH (H. G.), Auk, xxv, 1908, 185 (Dry Willow Creek, Yuma Co., Colorado, breeding; crit.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 185.
- (?) *Picus (Dendrocopus) villosus* SWAINSON, Fauna Bor.-Am., ii, 1831, 305.
- [*Trichopicus*] *villosus* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).
- Dendrocopus villosus*, Typical, HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 230.
- [*Dendrocopus*] *villosus* SHARPE, Hand-list, ii, 1900, 214, part.
- Picus leucomelas* BODDAERT, Tabl. Pl. Enl., 1783, 21 (based on *Pic. du Canada* Daubenton, Pl. Enl., pl. 345, fig. 1=adult female).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 199.—GRAY, List Birds Brit. Mus., Capit. and Picid., 1863, 46.
- [*Picus*] *canadensis* GMELIN, Syst. Nat., i, pt. i, 1788, 437 (based on *Pic. du Canada* Daubenton, Pl. Enl., pl. 345, fig. 1=adult female).—LATHAM, Index Orn., i, 1790, 230.
- Picus canadensis* STEPHENS, Shaw's Gen. Zool., ix, 1815, 173.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xxvi, 1818, 92.
- (?) *Picus canadensis* (not of Gmelin?) AUDUBON, Orn. Biog., v, 1839, 188, pl. 417, fig. 7; Synopsis, 1839, 177; Birds Am., oct. ed., iv, 1845, 235, pl. 258.—MALHERBE, Mon. Picid., i, 1861, 78; iii, 1861, pl. 21, fig. 4.
- (?) *P[icus] canadensis* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1318.—BONAPARTE, Consp. Av., 1850, 137.—REICHENBACH, Handb., Scansores, Picinæ, 1854, 373, pl. 638, figs. 4250, 4251.
- P[icus] leucomelanus* WAGLER, Syst. Av., 1827, *Picus*, sp. 18 (Canada; coll. Paris Mus.).
- Picus martini* AUDUBON, Birds Am., 1838, pl. 417, figs. 1, 2 (Toronto, Ontario; type now in coll. U. S. Nat. Mus.).—BONAPARTE, Geog. and Comp. List, 1838, 39.—MALHERBE, Mon. Picid., i, 1861, 82; iii, 1861, pl. 22, figs. 1, 2.

- Picus martinæ* AUDUBON, Orn. Biog., v, 1839, 181; Synopsis, 1839, 178; Birds Am., oct. ed., iv, 1842, 240, pl. 260.
- P[icus] martinæ* GRAY, Gen. Birds, ii, 1845, 435.—BONAPARTE, Consp. Av., i, 1850, 138.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 364, pl. 632, figs. 4206, 4207.
- [*Trichopicus*] *martinæ* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).
- Picus phillipsii* AUDUBON, Orn. Biog., v, 1839, 186, pl. 417, figs. 5, 6 (Massachusetts; type now in coll. U. S. Nat. Mus.); Synopsis, 1839, 177; Birds Am., oct. ed., iv, 1842, 238, pl. 259.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 686.—MALHERBE, Mon. Pict., i, 1861, 84; iii, 1861, pl. 21, fig. 5.—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 46.
- P[icus] philipsii* GRAY, Gen. Birds, ii, 1845, 435.
- P[icus] philipsi* BONAPARTE, Consp. Av., i, 1850, 138.
- [*Picus*] *phillipsii* GRAY, Hand-list, ii, 1870, 185, no. 8601.
- [*Trichopicus*] *philipsi* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).
- P[icus] philippii* REICHENBACH, Handb., Scansores, Picinæ, 1854, 364, pl. 632, figs. 4204, 4205.
- Picus rubricapillus* NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 685 (new name for *P. martini* Audubon).
- [*Picus* (*Trichopicus*) *villosus*] var. *medius* (not *Picus medius* Linnæus) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvii.
- [*Picus villosus*.] Var. *medius* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 84.
- [*Picus villosus*.] Var. *media* SUNDEVALL, Consp. Av. Picin., 1866, 16 (Wisconsin).
- [*Picus villosus* . . . a. *villosus* . . .] b'. *medii* COUES, Birds Northwest, 1874, 279.
- [*Picus villosus*] b. *medius* COUES, Key N. Am. Birds, 2d ed., 1884, 483.
- Picus villosus medius* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 336 (index).
- Trichopicus villosus medius* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 346 (index).

### DRYOBATES VILLOSUS AUDUBONII (Swainson).

#### SOUTHERN HAIRY WOODPECKER.

Similar to *D. v. villosus*, but decidedly smaller, white of under parts, etc., less pure, and white markings of upper parts rather smaller.

*Adult male*.—Length (skins), 191–217 (199.3); wing, 110.5–117.5 (113.8); tail, 58–69 (65.2); exposed culmen, 26.5–30.5 (28.1); tarsus, 19.5–21.5 (20.6); outer anterior toe, 13–14.5 (13.6).<sup>a</sup>

*Adult female*.—Length (skins), 188–203 (195.6); wing, 108.5–115.5 (112.2); tail, 59–70 (64.8); exposed culmen, 25–27.5 (26); tarsus, 19–23 (20.1); outer anterior toe, 12.5–14 (13.2).<sup>b</sup>

Lower Austral Zone of eastern United States, from lowlands of Georgia and Florida westward along the Gulf coast plain to south-eastern Texas; northward through lowlands of lower Mississippi Valley to southeastern Missouri and lower Wabash Valley, and along Atlantic coast plain to southeastern Virginia (Dismal Swamp).

*Picus audubonii* SWAINSON, Fauna Bor.-Am., ii, 1831, 306, figs. 5, 6, 7 (Georgia).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 200 (crit.).

<sup>a</sup> Eleven specimens (ten from Florida, one from Georgia).

<sup>b</sup> Eleven specimens (eight from Florida, three from Georgia).

- Picus auduboni* TRUDEAU,<sup>a</sup> Journ. Ac. Nat. Sci. Phila., vii, 1837, 404 (near New Orleans, Louisiana; type now in coll. U. S. Nat. Mus.;=young with yellow crown-patch).—BONAPARTE, Geog. and Comp. List, 1838, 39.—AUDUBON, Orn. Biog., v, 1839, 194, pl. 417, fig. 10; Synopsis, 1839, 181; Birds Am., oct. ed., iv, 1842, 259, pl. 265.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 684.—MALHERBE, Mon. Pict., i, 1861, 87; iii, 1861, pl. 22, fig. 4.
- P[icus] auduboni* GRAY, Gen. Birds, ii, 1845, 435.—BONAPARTE, Consp. Av., i, 1850, 138.
- [*Trichopicus*] *auduboni* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).
- Picus villosus*, var. *auduboni* MERRIAM, Am. Nat., viii, Jan., 1874, 88 (St. Johns and Ocklawaha rivers, Florida).
- [*Picus villosus*.] Var. *auduboni* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, Jan., 1874, 503.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 377 (s. Illinois).
- Dryobates villosus audubonii* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, (and 2ded., 1895), no. 393b.—FOX, Auk, iii, 1886, 319 (Roane Co., e. Tennessee).—SCOTT, Auk, vi, 1889, 251 (Tarpon Springs, Florida).—LOOMIS, Auk, vii, 1890, 37 (Pickens Co., South Carolina, 3,000 ft.); viii, 1891, 327 (Cæsars Head, South Carolina).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 51.—BEYER, Proc. Louisiana Soc. Nat. for 1897-99 (1900), 102 (Louisiana, resident).—DANIEL, Auk, xix, 1902, 400 (Dismal Swamp, Virginia).—OBERHOLSER, Notes on Mam. and Summer Birds W. N. Carolina, 1905, 15 (up to 5,000 ft. in mts.); Proc. U. S. Nat. Mus., xl, 1911, 596, 601 (monogr.).—WAYNE, Birds South Car., 1910, 88 (descr. nest and eggs).
- D[ryobates] villosus audubonii* RIDGWAY, Man. N. Am. Birds, 1887, 282.
- Dryobates villosus audubonii* SINGLEY, Rep. Geol. Surv. Texas, 1894, 349 (Lee Co., Texas, resident).
- Dryobates villosus auduboni* BREWSTER, Auk, iii, 1886, 104 (Black Mts., w. North Carolina, below 4,000 ft.).—BATCHELDER, Auk, iii, 1886, 313, 314, in text (w. North Carolina, 3,300 ft., in winter).—(?) SENNETT, Auk, iv, 1887, 242 (Roan Mt., 6,300 ft., July, and Cranberry, 3,000 ft., Aug., North Carolina).—JENKINS, Auk, xxiii, 1906, 167 (crit.).—HOWELL, Proc. Biol. Soc. Wash., xxi, 1908, 120 (Natchitoches, Louisiana, Dec.); Auk, xxvi, 1909, 133 (n. Georgia); xxvii, 1910, 216 (Olive Branch, Alexander Co., Illinois, May, common), 296 (Barboursville and Mammoth Cave, Kentucky), 301 (Cross Mt., etc., e. Tennessee), 382 (St. Francis River and Cushion Lake, s. e. Missouri).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 186.
- [*Picus* (*Trichopicus*) *villosus*.] var. *minor* (not *Picus minor* Linnæus) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvii (nomen nudum).
- [*Picus villosus*.] Variety *minor* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 85.
- [*Picus villosus*.] Var. *minor* SUNDEVALL, Consp. Av. Picin., 1866, 16, part.
- [*Picus villosus* . . . a. *villosus* . . .] c'. *minores* COUES, Birds Northwest, 1874, 280 (synonymy).
- [*Picus villosus*] c. *minor* COUES, Key N. Am. Birds, 2d ed., 1884, 483.
- Picus villosus minor* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 336 (index).
- Trichopicus villosus minor* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 346 (index).
- [*Dendrocopus villosus*.] *Small Southern Form* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 231.

<sup>a</sup> Redescribed as a new species, the author being apparently unaware of Swainson's prior description under the same name.



- Picus currieri* MALHERBE, Mon. Picid., i, 1861, 85 ("North America;" = young female); iii, 1861, pl. 22, fig. 3.
- Picus villosus* (not of Linnæus) WOODHOUSE, in Sitgreaves' Expl. Zúñi and Col. R., 1853, 89 (Indian Territory; Texas).—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 302 (Florida).—COUES, Check List, 1873, no. 298, part; 2d ed., 1882, no. 438, part.—OGILBY, Sci. Proc. Roy. Dublin Soc., iii 1882, 57 (Navarro Co., Texas, resident).
- D[ryobates] villosus* CABANIS, Mus. Hein., iv, heft 2, 1863, 66, part (Georgia; South Carolina).
- Dryobates villosus* BECKHAM, Auk, iv, 1887, 304 (Bayou Sara, Louisiana).—RIDGWAY, Orn. Illinois, i, 1889, 376, part.—FERRY, Auk, xxiv, 1907, 432 (Cairo, Illinois, Aug.).—PHILIPP, Auk, xxvii, 1910, 318 (Lake Ellis, etc., North Carolina, summer).
- Dendrocopus maynardi* (not *Dryobates villosus maynardi* Ridgway) HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 570 (Tarpon Springs, Florida); Ibis, 1891, 467, in text (Tarpon Springs).

### DRYOBATES VILLOSUS MAYNARDI Ridgway.

#### MAYNARD'S WOODPECKER.

Similar to *D. v. audubonii*, but wing shorter, loreal region wholly white (sometimes with a few minute dots of black), thus connecting the white superciliary and suborbital stripes, sides of breast more streaked with black; adult male with red nuchal patch broader, not interrupted medially.

*Adult male*.—Length (skins), 180–200 (183); wing, 103–109 (107.3); tail, 61.5–68 (65.2); culmen, 26–29.5 (27.7); tarsus, 19–20.5 (19.8); middle toe, 13–14.5 (13.7).<sup>a</sup>

*Adult female*.—Length (skins), 170–200 (183); wing, 100.5–108.5 (104); tail, 61–68.5 (63.9); culmen, 23.5–27 (25); tarsus, 17.5–19.5 (19); outer anterior toe, 12.5–13.5 (12.8).<sup>a</sup>

Islands of New Providence and Andros, Bahamas.

*Picus villosus* (not of Linnæus) BRYANT, Proc. Bost. Soc. N. H., vii, 1859, 106 (Nassau, New Providence, Bahamas).—ALBRECHT, Journ. für Orn., 1861, 51 (Bahamas).—CORY, Birds Bahama I., 1880, 120 (New Providence I.).

<sup>a</sup> Thirteen specimens.

Locality,	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from New Providence Island.....	107	65.2	28	19.8	13.7
Three adult males from Andros Island.....	108.5	65.5	27.2	19.9	13.7
One adult male ( <i>D. v. piger</i> ) from Great Bahama Island.....	106	.....	28.5	20	12.5
Five adult males ( <i>D. v. piger</i> ) from Abaco Island.....	107.2	64	28.5	20.3	13.4
FEMALES.					
Ten adult females from New Providence Island.....	103.6	63.2	25	19.1	12.9
Three adult females from Andros Island.....	105.5	66.2	25.2	18.7	12.8
Three adult females ( <i>D. v. piger</i> ) from Great Bahama Island...	106.5	64.5	24	18.7	12.8
Nine adult females ( <i>D. v. piger</i> ) from Abaco Island.....	103.4	62.8	24.7	19.2	13.1

*Picus insularis* (not of Gould, 1862) MAYNARD, Nat. in Florida, i, no. 4, 1885 (New Providence, Bahamas; coll. C. J. Maynard).

[*Picus*] *villosus insularis* CORY, List Birds West Ind., 1885, 19.

*Picus villosus insularis* CORY, Auk, iii, 1886, 375, part (synonymy).

*D[ryobates] villosus maynardi* RIDGWAY, Man. N. Am. Birds, Sept. 27, 1887, 282 (new name for *Picus insularis* Maynard, preoccupied).

*Dryobates villosus maynardi* RIDGWAY, Man. N. Am. Birds, 1887, 591; Auk, viii, 1891, 331 (New Providence I.).—CORY, Birds West Ind., 1889, 170, part (synonymy); Cat. West Ind. Birds, 1892, 12, 104, 127, 142, part (New Providence I.; Andros I.).—NORTHROP, Auk, viii, 1891, 75 (Andros I.).—BONHOTE, Ibis, 1899, 516 (New Providence I.; habits; crit.); 1903, 294, part (New Providence I.).—RILEY, Auk, xxii, 1905, 355 (New Providence I.).—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 596, 603 (monogr.).—TODD, Ann. Carnegie Mus., vii, 1911, 420 (New Providence I.; Andros I.; crit.).—WORTHINGTON, Ann. Carnegie Mus., vii, 1911, 453 (New Providence I.).

*Dryobates maynardi* BANGS, Auk, xvii, July, 1900, 288 (Nassau, New Providence I.; descr. young).

*D[ryobates] m[aynardi] maynardi* JENKINS, Auk, xxiii, April, 1906, 169, in text.

[*Dendrocopus villosus*.] Subsp.  $\alpha$ . *Dendrocopus maynardi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 233.

[*Dendrocopus*] *maynardi* SHARPE, Hand-list, ii, 1900, 214, part.

#### DRYOBATES VILLOSUS PIGER G. M. Allen.

##### ALLEN'S WOODPECKER.

Similar to *D. v. maynardi*, but with fewer black streaks (or none) on sides of breast and, usually, with one or more black spots on inner webs of two lateral pairs of normal rectrices.

*Adult male*.—Length (skins), 182–203 (189); wing, 105.5–110 (107); tail, 62.5–65.5 (64); culmen, 27.5–29.5 (28.5); tarsus, 20–20.5 (20.3); outer anterior toe, 12.5–14 (13.4).<sup>a</sup>

*Adult female*.—Length (skins), 170–202 (180); wing, 100–109.5 (104.2); tail, 60–68 (63.3); culmen, 22.5–27 (24.4); tarsus, 18–20.5 (19); outer anterior toe, 12–14 (13).<sup>b</sup>

Abaco, Little Abaco, and Great Bahama islands, Bahamas.

*Picus villosus insularis* (not *Picus insularis* Maynard, 1885, nor of Gould, 1862) CORY, Auk, iii, 1886, 375, part ("northern Bahama Islands").

*Dryobates villosus maynardi* (not of Ridgway, 1887) CORY, Birds West Ind., 1889, 170, part ("northern Bahama Islands"); Auk, viii, 1891, 298 (Abaco I.), 350, part (Abaco I.); Cat. West Ind. Birds, 1892, 12, 104, 127, 142, part (Abaco I.; Great Bahama I.).—RIDGWAY, Auk, viii, 1891, 334 (Abaco I.).—BONHOTE, Ibis, 1903, 294, part (Great Bahama I.; Abaco I.; Little Abaco I.).

*Dryobates villosus piger* ALLEN (G. M.), Auk, xxii, April, 1905, 124 (Great Bahama Island, Bahamas; coll. Mus. Comp. Zool.).—JENKINS, Auk, xxiii, 1906, 169, in text.—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 596, 603 (monogr.).—TODD, Ann. Carnegie Mus., vii, 1911, 421 (Abaco I.; crit.).—WORTHINGTON, Ann. Carnegie Mus., vii, 1911, 454 (Abaco I.).

*Dryobates maynardi piger* JENKINS, Auk, xxiii, April, 1906, 169, in text.

<sup>a</sup> Six specimens.

<sup>b</sup> Twelve specimens.

**DRYOBATES VILLOSUS SEPTENTRIONALIS (Nuttall).**

**NORTHERN HAIRY WOODPECKER.**

Similar to *D. v. villosus* but decidedly larger, the white purer, and white markings averaging rather larger.

*Adult male*.—Length (skins), about 245–250;<sup>a</sup> wing, 128.5–138 (132.3); tail, 77.5–87 (83.3); exposed culmen, 34–37.5 (36); tarsus, 22–25 (23.6); outer anterior toe, 14.5–16 (15.3).<sup>b</sup>

*Adult female*.—Length (skins), 227–260 (240); wing, 128–136.5 (130.4); tail, 78.5–90.5 (84.3); exposed culmen, 29.5–33.5 (31.3); tarsus, 22–23.5 (22.5); outer anterior toe, 13.5–15.5 (14.3).<sup>c</sup>

Canadian Zone (except Pacific coast section) of North America, from western Yukon (Fort Reliance), southern Alaska (Homer, Kenai Peninsula, September 13), central Mackenzie, and central Keewatin southward (at least in fall, winter, and spring) to Saskatchewan, eastern Montana (Fort Keogh, April 7), Manitoba, Alberta, Quebec, etc. (Specimens taken during June at Columbia Falls, Montana, and Sebec Lake, Maine, are very nearly if not quite as large as some specimens of *D. v. septentrionalis* from the far north, and apparently should be referred to that form; but examples taken in New Brunswick and Nova Scotia during August, October, and November, are decidedly smaller. See table of measurements on p. 202.)

[*Picus*] *villosus* (not of Linnæus) FORSTER, Philos. Trans., lxii, 1772, 388 (Severn R.).

*Picus villosus* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxxi, 1818, 71, part (Hudson Bay).—GRAY, List Birds Brit. Mus., Piciidæ, 1868, 45 (Fort Simpson).—BLAKISTON, Ibis, 1862, 3 (Forks of Saskatchewan R.); 1863, 51 (north to lat. 63°, n. w. Canada; habits).—COUES, Check List, 1873, no. 298, part; 2d ed., 1882, no. 438, part.—CORY, Nat. Hist. Magdalen Is., 1878, 51.—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 236 (Godbout, Quebec).—STEARNS, Proc. U. S. Nat. Mus., vi, 1883, 118 (Eskimo R., Labrador).—SCOTT, Auk, i, 1884, 161 (Ottawa, Ontario, in winter).

(?) *Picus* (*Dendrocopus*) *villosus* SWAINSON, Fauna Bor.-Am., ii, 1831, 305.

[*Dendrocopus*] *villosus* SHARPE, Hand-list, ii, 1900, 214, part.

[*Picus*] *leucomelas* (not of Boddaert, 1783) GRAY, Hand-list, ii, 1870, 185, no. 8599, part.

*D[ryobates]* *leucomelas* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 67, part.

*Picus villosus leucomelas* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 188, 219; Nom. N. Am. Birds, 1881, no. 360a.

*Dryobates villosus leucomelas* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, 393a; 3d ed., 1910, 185.—SETON, Auk, iii, 1886, 155 (Manitoba).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 156 (Ft. Reliance, etc.).—CHAPMAN, Bull.

<sup>a</sup> Only two of the eleven skins are made up in such shape that the total length can be measured with approximate accuracy.

<sup>b</sup> Eleven specimens.

<sup>c</sup> Ten specimens.



- Am. Mus. N. H., iii, 1890, 138, part (Ft. Liard, Mackenzie; Ft. Reliance, Yukon Terr.; crit.); xvi, 1902, 239 (Homer, Kenai Peninsula, Alaska, Sept.).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 548 (Winnipeg, etc., Manitoba, breeding).—CLARKE (W. E.), Auk, vii, 1890, 322 (Ft. Churchill).—NUTTING, Bull. Lab. N. H. State Univ. Iowa, ii, 1893, 270 (Grand Rapids, lower Saskatchewan).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 50.—BISHOP, North Am. Fauna, no. 19, 1900, 77 (Fifty-mile R., near Miles Canyon, Yukon Valley).—COUBEAUX, Ottawa Nat., 1900, 28 (s. Saskatchewan, resident).—FLEMING, Auk, xviii, 1901, 39 (Parry Sound and Muskoka, n. Ontario, resident).—CURRIER, Auk, xxi, 1904, 35 (Leech Lake, n. Minnesota, breeding).—WOOD, Auk, xxii, 1905, 177 (Isle Royal, n. Michigan, Aug., Sept.).—JENKINS, Auk, xxiii, 1906, 166 (crit.).—ADAMS, Ecol. Surv. N. Mich., 1906, 123 (Isle Royal, Aug., Sept.).—ANDERSON, Proc. Davenport Ac. Sci., xi, 1907, 274 (Sioux City, Iowa, Nov., Dec.).—PREBLE, North Am. Fauna, no. 27, 1908, 379 (Great Slave Lake, Ft. Simpson, etc., to lower Athabasca R.).—STANSILL, Auk, xxvi, 1909, 395 (centr. Alberta).—GRINNELL (J.), Condor, xi, 1909, 205 (Forty-mile, Yukon Terr., Nov.).—OSGOOD, North Am. Fauna, no. 30, 1909, 89 (Plateau Mt., Yukon Terr.).
- D[ryobates] villosus leucomelas* RIDGWAY, Man. N. Am. Birds, 1887, 282.
- D[ryobates] villosus leucomelas* WOOD and GAIGE, Pub. 4, Mich. Geol. and Biol. Surv., 1911, in text (breeding on Isle Royale).
- [*Picus villosus*.] Var. *canadensis* (not *Picus canadensis* Gmelin) BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 503, part.
- Picus septentrionalis* NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 684 ("northern parts of the continent as far as the 63d parallel, as well as in the Oregon Territory").
- Dryobates villosus septentrionalis* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, June 3, 1911, 597, 604 (monogr.).
- [*Picus (Trichopicus) villosus*] var. *major* (not *Picus major* Linnaeus) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvii (nomen nudum).
- [*Picus villosus*] Variety *major* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 85, part.
- [*Picus villosus*.] Var. *major* SUNDEVALL, Consp. Av. Picin., 1866, 16, part.
- [*Picus villosus* . . . a. *villosus* . . .] a'. *maiores* COUES, Birds Northwest, 1874, 279, part.
- [*Picus villosus*] a. *major* COUES, Key N. Am. Birds, 2d ed., 1884, 483.
- Picus villosus major* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 336 (index).
- Trichopicus villosus major* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 346 (index).
- [*Dendrocopus villosus*.] Large Northern form HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 231.

### DRYOBATES VILLOSUS TERRÆNOVÆ Batchelder.

#### NEWFOUNDLAND WOODPECKER.

Similar to *D. v. villosus* and *D. v. septentrionalis* (intermediate in size) but with much less white on back and wings, the white dorsal stripe usually more or less broken by black spotting (sometimes reduced to spots), the wing-coverts with fewer and smaller white spots, and white spots on remiges reduced in size; sides and flanks sometimes streaked with dusky, and lateral rectrices sometimes with one or more black spots or bars on inner web.

*Adult male*.—Length (skins), 222–238 (231); wing, 126–133.5 (128.4); tail, 80.5–90 (83.4); culmen, 29.5–32 (30.7); tarsus, 21.5–23.5 (22.4); outer anterior toe, 15–16 (15.4).<sup>a</sup>

<sup>a</sup> Six specimens.

*Adult female*.—Length (skins), 220–235 (225); wing, 122–128 (124.8); tail, 80.5–86 (82.8); culmen, 25.5–27 (26.3); tarsus, 21.5–23.5 (22.2); outer anterior toe, 14–15 (14.6).<sup>a</sup>

*Dryobates villosus leucomelas* (not *Picus leucomelas* Boddaert) PORTER, Auk, xviii, 1900, 72 (Newfoundland).—(?) TOWNSEND and ALLEN, Proc. Bost. Soc. N. H., xxxiii, 1907, 376 (s. Labrador, resident).

*Dryobates villosus terranovæ* BATCHELDER, Proc. New Engl. Zool. Club, iv, June 24, 1908, 37 (Placentia, Newfoundland; coll. C. F. Batchelder).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxvi, 1909, 296 (Check List no 393g); Check List, 3d ed., 1910, 186.—ARNOLD, Auk, xxix, 1912, 76.

*Dryobates villosus terracnovæ* OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 607 (monogr.).

### DRYOBATES VILLOSUS MONTICOLA Anthony.

#### ROCKY MOUNTAIN WOODPECKER.

Similar, in large size and whiteness of under parts, to *D. v. septentrionalis*, but with white spots on wing-coverts much reduced in size or number, or altogether wanting.

*Adult male*.—Length (skins), 215–236 (226); wing, 130–137.5 (133.3); tail, 78.5–89.5 (82.5); exposed culmen, 28–34 (32.6); tarsus, 22–24.5 (22.7); outer anterior toe, 14–16 (14.7).<sup>b</sup>

*Adult female*.—Length (skins), 208–231 (218); wing, 126.5–134.5 (131.1); tail, 71.5–87.5 (79.8); exposed culmen, 28–31 (29.5); tarsus, 21.5–23.5 (22.1); outer anterior toe, 13.5–15.5 (14.3).<sup>c</sup>

Canadian and Transition zones of Rocky Mountain district, from central and eastern British Columbia (Vernon; Ashcroft; Ashmola River; Lake la Hache; Crater Mountain; Similkameen River; lower Fraser Valley; Okanogan; Querelle; Sicamous; Caribou district; Chilliwack) and southward to eastern Utah and northern New Mexico; eastward to eastern Montana (Fort Keogh and Lame Deer, breeding), western South Dakota (Elk Mountains, breeding), western Nebraska (Squaw Cañon, Sioux County, June; Harrison, Sioux County, February); westward to eastern Washington (Spokane River; Fort Spokane and Conconully, September), and eastern Utah (Wahsatch and Uintah Mountains, breeding).

*Picus harrisii* (not of Audubon) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 87, part (Spokane R., e. Washington).

*Picus harrisii* MERRIAM, An. Rep. U. S. Geol. Surv. Terr. for 1872 (1873), 693 (Teton Canyon, Idaho, June).

*Picus harrisii* AIKEN, Proc. Bost. Soc. N. H., xv, 1872, 206 (e. Colorado).—RIDGWAY, Orn. 40th Parallel, 1877, 545, part (Parley's Park, Utah); Field and Forest, ii, 1877, 209 (Colorado).

[*Picus villosus*.] Var. *harrisii* COUES, Key N. Am. Birds, 1872, 294, part.

*Picus villosus* . . . var. *harrisii* COUES, Check List, 1873, no. 298a, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, part.—HENSHAW, Zool. Exp. W. 100th Merid., 1875, 386 (Grass Valley, Utah; Ft. Garland and Pagosa, Colorado).

<sup>a</sup> Five specimens.

<sup>b</sup> Ten specimens.

<sup>c</sup> Eight specimens.

- Picus villosus*, var. *harrisi* ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 63 (Yellowstone and Musselshell rivers, Montana).—SCOTT, Bull. Nutt. Orn. Club, iv, 1879, 95 (Twin Lakes, Colorado, breeding).
- Picus villosus*, var. *harrisii* RIDGWAY, Am. Journ. Sci., iv, Dec., 1872, 456, part; Bull. Essex Inst., v, 1873, 173 (Wahsatch Mts., Utah, 4,000–10,000 ft.).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 151 (Colorado).—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 9 (mts. of Utah).
- Picus villosus* . . . var. *harrisii* HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 48 (mts. of Utah, resident), 89 (mts. near Ft. Garland, Colorado, June).
- Picus villosus harrisi* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 34 (Parleys Park, Utah); Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 360b, part.—COUES, Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 616 (Rocky Mts., lat. 49°); Check List, 2d ed., 1882, no. 439, part.—DREW, Bull. Nutt. Orn. Club, vi, 1881, 140 (San Juan Co., Colorado); Auk, ii, 1885, 17 (Colorado, breeding at 4,500–11,500 ft.).—ALLEN and BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 196 (Colorado Springs, Colorado, May, June).—AGERSBORG, Auk, ii, 1885, 283 (s. e. South Dakota; "resident").—HENSHAW, Auk, iii, 1886, 78 (upper Pecos R., New Mexico).
- [*Picus villosus*] var. *harrisii* ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 180 (mts. of Colorado).
- [*Picus*] v[*illosus*] *harrisi* COUES, Key N. Am. Birds, 2d ed., 1884, 483 part.
- Picus villosus harrisii* GRINNELL (G. B.), in Ludlow's Rep. Recon., 1876, 80 (Little Belt Mts., Montana).
- Dryobates villosus harrisii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 393c, part.—COOKE, Bird Migr. Miss. Val., 1888, 128 (Vermilion, South Dakota).
- Dryobates villosus harrisi* BECKHAM, Auk, iv, 1887, 120 (Pueblo Co., Colorado).
- [*Dendrocopus villosus*.] Subsp.  $\beta$ . *Dendrocopus harrisi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 234, part (localities in Montana, Dakotas, Wyoming, and Colorado).
- Picus villosus* (not of Linnæus) ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 163 (Mt. Lincoln, Colorado).—(?) WILLIAMS, Bull. Nutt. Orn. Club, vii, 1882, 62 (Belt Mts., Montana, breeding).—(?) CAMERON, Auk, xxiv, 1907, 270 (Custer and Davenport Counties, Montana, breeding).
- (?) *Dryobates villosus* NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 155 (Brit. Columbia; s. e. Alaska).
- [*Picus villosus* . . . b. *harrisii*] a. *maiores* COUES, Birds Northwest, 1874, 280, part.
- Dryobates villosus hyloscopus* (not *D. hyloscopus* Cabanis and Heine) AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 393d, part.—MERRIAM, North Am. Fauna, no. 5, 1891, 97 (Salmon R. and Sawtooth Mts., etc., Idaho).—LOWE, Auk, xi, 1894, 268 (Wet Mts., Colorado, 10,000 ft.).—RICHMOND and KNOWLTON, Auk, xi, 1894, 303 (south-centr. Montana).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 53, part.—COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 82 (resident in Colorado, breeding up to 11,000 ft.).—MERRILL (J. C.), Auk, xiv, 1897, 353 (Ft. Sherman, Idaho, resident).—CARY, Auk, xviii, 1901, 233 (Black Hills, Wyoming).—SILLOWAY, Bull. Univ. Montana, no. 3, 1901, 50 (Flathead Lake, etc., Montana).—BROOKS, Auk, xx, 1903, 281 (breeding at 158-mile House, Caribou Distr., Brit. Columbia).
- [*Dryobates*] *villosus hyloscopus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 596, part.
- (?) *Dryobates villosus leucomelas* (not of Ridgway, 1885; not *Picus leucomelas* Boddaert) CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 138, part (Ashcroft, Brit. Columbia; crit.).—FANNIN, Check List Birds Brit. Col., 1891, 27 (e. of Cascade Range).—ROADS, Proc. Ac. Nat. Sci. Phila., 1893, 43 (int. Brit. Colum-



bia; crit.).—BROOKS, Auk, xvii, 1900, 106 (lower Fraser Valley, Brit. Columbia); xx, 1903, 281 (Querelle and Caribou District, Brit. Columbia).—KERMODE, Prov. Mus. Victoria, 1909, 48 (Sicamous and Chilliwack, int. Brit. Columbia).

*Dryobates villosus montanus* (not *Picus montanus* Ord, 1815, nor Brehm, 1828) ANTHONY, Auk, xiii, Jan., 1896, 32 (Boulder Co., Colorado, Dec.; coll. A. W. Anthony).

[*Dryobates villosus*] *monticola* ANTHONY, Auk, xv, Jan., 1898, 54, in text (to replace *D. v. montanus*, preoccupied).

*Dryobates villosus monticola* AMERICAN ORNITHOLOGISTS' UNION, Auk, xvi, 1899, 110; Check List, 3d ed., 1910, 186.—BAILEY (Florence M.), Auk, xxi, 1904, 353 (upper Pecos R., New Mexico, 7,400–11,600 ft., breeding).—JENKINS, Auk, xxiii, 1906, 168 (crit.).—GILMAN, Condor, x, 1908, 147 (Navajo Reservation, New Mexico, resident).—ROCKWELL, Condor, x, 1908, 164 (Mesa Co., w. Colorado, resident).—WARREN (E. R.), Condor, xi, 1909, 14 (Montrose Co., Colorado, resident).—HENDERSON, Univ. Colo. Stud., vi, 1909, 231 (mts. of Colorado, resident).—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 606 (monogr.).

[*Dendrocopos*] *monticola* SHARPE, Hand-list, ii, 1900, 214.

#### DRYOBATES VILLOSUS LEUCOTHORECTIS Oberholser.

##### WHITE-BREASTED WOODPECKER.

Similar to *D. v. monticola* but decidedly smaller.

*Adult male*.—Length (skins), 201–235 (216); wing, 123.5–131 (126.3); tail, 75.5–86.5 (79.4); exposed culmen, 28.5–33 (30.8); tarsus, 20–22.5 (21.5); outer anterior toe, 12.5–15.5 (13.8).<sup>a</sup>

*Adult female*.—Length (skins), 196–214 (207); wing, 120–128 (123.6); tail, 73.5–83 (77.8); exposed culmen, 24–27.5 (25.9); tarsus, 20–22 (20.8); outer anterior toe, 13–14.5 (13.5).<sup>b</sup>

Arizona (except northeastern portion) and middle New Mexico to extreme western Texas (Guadalupe Mountains) and southern Utah (Pine Valley; River View; Beaver Mountains).

*Picus harrisi* (not of Audubon) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 87, part (Little Colorado R., Arizona; Ft. Fillmore, Ft. Massachusetts, and Rio Grande, New Mexico); Cat. N. Am. Birds, 1859, no. 75, part.—KENNERLY, Rep. Pacific R. R. Surv., ix, x, pt. iv, no. 3, 1859, 21 (Little Colorado R.).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 52 (Ft. Whipple, Arizona; crit.).—COOPER, Orn. Calif., 1870, 375, part (e. branches of Colorado R., Arizona).

*Picus harrisi* COUES, Ibis, 1865, 162 (Ft. Whipple).

[*Picus villosus*] Var. *harrisi* COUES, Key N. Am. Birds, 1872, 294, part.

*Picus villosus* . . . var. *harrisi* . . . COUES, Check List, 1873, no. 298a, part.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 133 (Ft. Wingate, New Mexico, etc.).

*Picus villosus*, var. *harrisi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, part.—HENSHAW, Zool. Exp. W. 100th Merid., 1875, 386, part (Tanks and Mt. Graham, Arizona).

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Ten specimens.

- Trichopicus harrisi* HENRY, Proc. Ac. Nat. Sci. Phila., 1859, 105 (New Mexico).  
*Picus villosus*, var. *harrisi* RIDGWAY, Am. Journ. Sci., iv, 1872, 456, part.  
*Picus villosus harrisi* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 360*b*, part.—COUES, Check List, 2d ed., 1882, no. 439, part.—BATCHELDER, Auk, ii, 1885, 127 (Las Vegas Hot Springs, New Mexico).  
*P[icus] v[illosus] harrisi* COUES, Key N. Am. Birds, 2d ed., 1884, no. 483, part.  
*Dryobates villosus harrisi* RIDGWAY, Proc. U. S. Nat. Mus., viii, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 393*c*, part.—MITCHELL, Auk, xv, 1898, 308 (San Miguel Co., New Mexico, breeding).  
*D[ryobates] villosus harrisi* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.  
*[Dendrocopus villosus.]* Subsp.  $\beta$ . *Dendrocopus harrisi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 234, part (Springerville, Arizona).  
*[Picus villosus . . . b. harrisi] b'. medii* COUES, Birds North West, 1874, 280, part (in synonymy).  
*Picus harrisi* KENNERLY, Rep. Pacific R. R. Surv., iv, pt. vi, 1856, 10 (Little Colorado R., Arizona).  
*[Dryobates villosus] hyloscopus* (not *D. hyloscopus* Cabanis and Heine) BREWSTER, Auk, v, 1888, 252, in text (part).  
*Dryobates villosus hyloscopus* AMERICAN ORNITHOLOGISTS' UNION, Suppl. to Check List, 1889, 9, part; Check List, 2d ed., 1895, no. 393*d*, part.—MERIAM, North Am. Fauna, no. 3, 1890, 92 (San Francisco Mt., Arizona, in pine belt).—MEARNS, Auk, vii, 1890, 251 (mts. of Arizona, breeding in pine belt).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 53, part.—WETMORE, Kansas Univ. Sci. Bull., iv, no. 19, 1908, 378 (Bill Williams Mt., Arizona).  
*D[ryobates] villosus hyloscopus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 596, part.  
*Dryobates villosus leucothorectis* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, June 3, 1911, 597, 608 (Burley, New Mexico; coll. U. S. Nat. Mus.).—BERGTOLD, Auk, xxix, 1912, 332 (Gila R., New Mexico).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxix, 1912, 383.

### DRYOBATES VILLOSUS ORIUS Oberholser.

#### SIERRA WOODPECKER.

Similar to *D. v. leucothorectis*, but decidedly larger and with under parts less purely white (usually more or less tinged with pale drab-grayish); similar also to *D. v. monticola* but smaller and less purely white beneath.

*Adult male*.—Length (skins), 206–244 (224); wing, 125.5–132.5 (129.1); tail, 69.5–83.5 (77); exposed culmen, 30–34.5 (31.9); tarsus, 21–24 (22.9); outer anterior toe, 14–15.5 (15).<sup>a</sup>

*Adult female*.—Length <sup>b</sup> (skins), 213; wing, 125–128.5 (126.3); tail, 78.5–83 (80.1); exposed culmen, 27–27.5 (27.1); tarsus, 21–22 (21.5); outer anterior toe, 14–15 (14.4).<sup>c</sup>

Sierra Nevada district of California, Oregon, South-central Washington, and Nevada; casually (in winter) to western Washington (Puyallup).

<sup>a</sup> Thirteen specimens.

<sup>b</sup> One specimen.

<sup>c</sup> Four specimens.

- (?) *Picus (Trichopicus) harrisi* (not *Picus harrisi* Audubon) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvi, part.
- (?) *Picus harrisi* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 87, part (The Dalles Oregon).
- Picus harrisi* COOPER, Orn. Calif., 1870, 375, part (summit of Sierra Nevada).—FEILNER, Ann. Rep. Smithson. Inst. for 1864 (1865), 425 (Ft. Crook, California; habits).
- Picus harrisi* SCLATER, Proc. Zool. Soc. Lond., 1858, 3 (near Shasta, California).—RIDGWAY, Orn. 40th Parallel, 1877, 545, part (near Pyramid Lake and Carson City, Nevada).
- Picus "harrisi"* BELDING, Proc. U. S. Nat. Mus., i, 1878, 391, 393 (Calaveras Co., California, 2,400–4,500 ft.).
- [*Picus villosus*.] Var. *harrisi* COUES, Key N. Am. Birds, 1872, 294, part.
- Picus villosus* . . . var. *harrisi* COUES, Check List, 1873, no. 298a, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, part.
- Picus villosus*, *c. harrisi* RIDGWAY and BELDING, Proc. U. S. Nat. Mus., i, 1878, 428 (Soda Springs, Murphys, and Summit Meadows, California; breeding from 3,500 ft. upward).
- Picus villosus*, var. *harrisi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, 1874, 507, part.
- Picus villosus*, var. *harrisi* RIDGWAY, Am. Journ. Sci., iv, 1872, 456, part.
- Picus villosus harrisi* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 13, 15, 21, 24 (localities in Nevada); Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 360b, part.—MEARNS, Bull. Nutt. Orn. Club, iv, 1879, 195 (Ft. Klamath, Oregon, sum. res.).—COUES, Check List, 2d ed., 1882, 439, part.
- [*Picus villosus*] *harrisi* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.
- Dryobates villosus harrisi* RIDGWAY, Proc. U. S. Nat. Mus., viii, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 393c, part.—BENDIRE, Auk, v, 1888, 21 (Ft. Klamath, Oregon, breeding).—MERRILL (J. C.), Auk, v, 1888, 251 (Ft. Klamath).
- D[ryobates] villosus harrisi* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.
- [*Dendrocopus villosus*.] Subsp.  $\beta$ . *Dendrocopus harrisi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 234, part (Carson City, Nevada; Ft. Crook and Lake Tahoe, California).
- [*Picus villosus b. harrisi*] *b'. medii* COUES, Birds Northwest, 1874, 280, part. (in synonymy).
- [*Dryobates hyloscopus* (not of Cabanis and Heine) HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 214 (Sierra Nevada).
- [*Dryobates villosus*] *hyloscopus* BREWSTER, Auk, v, 1888, 252, in text, part (Ft. Klamath).
- Dryobates villosus hyloscopus* AMERICAN ORNITHOLOGISTS' UNION, Suppl. to Check List, 1889, 9, part; Check List, 2d ed., 1895, no. 393d, part.—MERRIAM, North Am. Fauna, no. 16, 1899, 114 (Mt. Shasta, California).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 53, part.—WIDMANN, Auk, xxi, 1904, 68 (Yosemite Valley).—RAY, Auk, xxii, 1905, 365 (high Sierra Nevada, breeding).—SHELDON, Condor, ix, 1907, 188 (Eagle Lake, n. e. California, breeding).—DAWSON, Auk, xxv, 1908, 483 (Kirkland, e. Washington).
- D[ryobates] villosus hyloscopus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 596, part.
- [*Dendrocopus*] *hyloscopus* SHARPE, Hand-list, ii, 1900, 214, part.
- Dryobates villosus orius* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, June 3, 1911, 597, 609 (Quincy, California; coll. U. S. Nat. Mus.).



**DRYOBATES VILLOSUS HYLOSCOPUS (Cabanis).**

**CABANIS' WOODPECKER.**

Similar to *D. v. leucothorectis*, but decidedly smaller, and under parts dull grayish or brownish white or pale drab-grayish or buffy grayish.

*Adult male*.—Length (skins), 194–221 (214); wing, 118.5–129 (122.6); tail, 68–78.5 (73.1); exposed culmen, 28.5–33 (30.9); tarsus, 21–22.5 (21.6); outer anterior toe, 13–14.5 (13.9).<sup>a</sup>

*Adult female*.—Length (skins), 190–210 (202); wing, 114.5–126 (120.1); tail, 67–81.5 (75.1); exposed culmen, 26–29 (27.2); tarsus, 19.5–21 (20.5); outer anterior toe, 12.5–14.5 (13.5).<sup>b</sup>

Coast district of California and northern Lower California, north to Mendocino County (Cahto; Mount Sanhedrin), south to San Pedro Martir Mountains, Hansen's Ranch, sixty miles north of Campo, etc.; in the interior of southern California north to Mariposa County (Bear Valley) and Mono County (White Mountains).

*Picus villosus* (not of Linnæus) VIGORS, Zool. Voy. "Blossom," 1839, 23 (Monte-rey, California).

*Picus (Trichopicus) harrisii* BAIRD, Rep. Pacific R. R. Surv., ix, 1859, p. xxvi, part.

*Picus harrisii* SCLATER, Proc. Zool. Soc. Lond., 1857, 127 (San José Valley, California).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 87, part (Petaluma, Santa Clara, Tulare Valley, Ft. Tejon, and Santa Isabel, California); Rep. U. S. and Mex. Bound., ii, pt. 2, 1859, 5 (Santa Isabel); Cat. N. Am. Birds, 1859, no. 75, part.—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 1, 1859, 57, part (Tejon Pass, California).—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon).—COOPER, Orn. Calif., 1870, 375, part (Santa Barbara and Tejon Pass).

[*Picus villosus*.] Var. *harrisii* COUES, Key N. Am. Birds, 1872, 294, part.

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from northern Lower California.....	121.7	73.2	30.6	21.6	13.8
Six adult males from southern California.....	124	73	31.3	21.6	14.1
FEMALES.					
Six adult females from Lower California.....	117.8	73.7	27.2	20.4	13
Five adult females from southern California.....	123	77.6	27.3	20.6	14.1

Besides the gradual increase in size toward the northward, indicated by the above measurements, there is a variation in color of under parts in the opposite direction, specimens from north of San Francisco Bay (in Marin, Sonoma, and Mendocino counties, California) being often pale drab-grayish or buffy grayish below, thus showing a tendency toward *D. v. harrisii*, as should be expected from the fact that the range of the latter begins in the next county northward.

- Picus villosus* . . . var. *harrisi* COUES, Check List, 1873, no. 298a, part.
- Picus villosus*, var. *harrisi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, part.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1876, 258 (Ft. Tejon and Mt. Whitney, California).
- Picus villosus*, var. *harrisi* RIDGWAY, Am. Journ. Sci., iv, 1872, 456, part.
- Picus villosus harrisi* BREWSTER, Bull. Nutt. Orn. Club, iii, 1878, 179 (Nicasio, Marin Co.; descr. young).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 360b, part.—COUES, Check List, 2d ed., 1882, no. 439, part.
- P[icus] v[illosus] harrisi* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.
- Dryobates villosus harrisi* RIDGWAY, Proc. U. S. Nat. Mus., viii, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 393c, part.—MORCOM, Bull. Ridgw. Orn. Club, no. 2, 1887, 41 (Bear Valley, June).—BRYANT (W. E.), Proc. Calif. Acad. Sci., ser. 2, 1889, 286 (Hansen's Ranch and San Pedro Martir Mts., Lower California, 7,000–10,000 ft.).
- D[ryobates] villosus harrisi* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.
- Dryobates villosus harrisi* EVERMANN, Auk, iii, 1886, 93 (Ventura Co., California, resident).
- [*Picus villosus* . . . b. *harrisi*] b'. *medii* COUES, Birds Northwest, 1874, 280, part (in synonymy).
- Dryobates hyloscopus* CABANIS and HEINE, Mus. Hein., iv, heft 2, June, 1863, 69 (San José, California; coll. Heine Mus.).
- Dryobates villosus hyloscopus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 9, part; Check List, 2d ed., 1895, no. 393, part; 3d ed., 1910, 186, part.—ANTHONY, Zoë, iv, 1893, 236 (San Pedro Martir Mts.).—BENDIRE, Life Hist. Birds N. Am., ii, 1895, 53, part.—GRINNELL (J.), Pub. 2, Pasadena Acad. Sci., 1898, 25 (Los Angeles Co., California); Univ. Calif. Pub. Zool., v, 1908, 61 (San Bernardino Mts., 6,000–9,800 ft.); Auk, xxii, 1905, 383 (Mt. Piños, Ventura Co., breeding).—MAILLIARD, Condor, iii, 1901, 122 (San Benito Co., resident).—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, Mendocino Co.; crit.).—JENKINS, Condor, viii, 1906, 126 (Monterey Co.); Auk, xxiii, 1906, 167 (crit.).—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 611 (monogr.).
- D[ryobates] villosus hyloscopus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 596, part.
- Dryobates v[illosus] hyloscopus* THOMPSON, Condor, iii, 1901, 17 (San Luis Obispo Co., breeding).
- [*Picus*] *hyloscopus* GRAY, Hand-list, ii, 1870, 185, no. 8604.
- [*Dendrocopus*] *hyloscopus* SHARPE, Hand-list, ii, 1900, 214, part.

### DRYOBATES VILLOSUS HARRISI (Audubon).

#### HARRIS'S WOODPECKER.

Similar to *D. v. hyloscopus*, but under parts (including lateral rectangles) light drab or buffy drab-gray, instead of white or nearly white, the head-stripes and stripe on back also usually more or less suffused with the same color, often uniformly light drab; average size slightly larger.

*Adult male*.—Length (skins), 210–240 (223); wing, 124–136 (127.8); tail, 73.5–84 (78.3); exposed culmen, 29–35 (31.7); tarsus, 22.5–24 (23.4); outer anterior toe, 15–16 (15.4).<sup>a</sup>

*Adult female*.—Length (skins), 202–222 (212); wing, 120–128 (124); tail, 74–82.5 (76.9); exposed culmen, 26–31 (28.2); tarsus, 21–23.5 (22.1); outer anterior toe, 14–15.5 (14.8).<sup>b</sup>

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Twelve specimens.

Humid Pacific coast district, from Humboldt and Siskiyou counties, northern California, through western Oregon and Washington, to British Columbia; occasional in winter as far southward as Monterey County.

*Picus harrisi* AUDUBON, Birds Am., folio ed., iv, 1838, pl. 417, figs. 8, 9.—TOWNSEND, Narrative, 1839, 347.

*Picus harrisi* AUDUBON, Orn. Biog., v, 1839, 191 (near Fort Vancouver, Washington; type now in coll. U. S. Nat. Mus.); Synopsis, 1839, 178; Birds Am., oct. ed., iv, 1842, 242, pl. 261.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 687.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 87, part ("dark bellied variety"; Whitby Island, Steilacoom, Spokane R., Vancouver, and Shoalwater Bay, Washington; Columbia R., Fort Dalles, and St. Helens, Oregon); Cat. N. Am. Birds, 1859, no. 75, part.—NEWBERRY, Rep. Pacific R. R. Surv., x, pt. iv, 1859, 89 (n. California; Oregon).—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 1, 1859, 57, part (n. California).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 159, part (w. Washington and Oregon).—MALHERBE, Mon. Picid., i, 1861, 73; iii, 1861, pl. 20, figs. 1, 2.—SUNDEVALL, Consp. Av. Picin., 1866, 17.—BROWN, Ibis, 1868, 419 (Vancouver I.).—GRAY, List Birds Brit. Mus., Picidæ, 1868, 47.—COOPER, Orn. Calif., 1870, 375, part (coast near Columbia R.).

*P[icus] harrisi* GRAY, Gen. Birds, ii, 1845, 435.—REICHENBACH, Handb. Scansores, Picinæ, 1854, 364, pl. 632, figs. 4208, 4209.

*P[icus] harrisi* BONAPARTE, Consp. Av., i, 1850, 138.

[*Picus*] *harrisi* LICHTENSTEIN, Nom. Mus. Berol., 1854, 75.—GRAY, Hand-list, ii, 1870, 184, no. 8593.

[*Trichopicus*] *harrisi* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).—GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 346 (index).

*Picus* (*Trichopicus*) *harrisi* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvii, part.

[*Picus villosus*.] Var. *harrisi* COUES, Key N. Am. Birds, Oct., 1872, 194, part.

*Picus villosus*, var. *harrisi* RIDGWAY, Am. Journ. Sci., iv, Dec., 1872, 456, part.

*Picus villosus* . . . var. *harrisi* COUES, Check List, 1873, no. [298a, part.

*Picus villosus*, var. *harrisi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, part.

*Picus villosus harrisi* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 6, in text, 188, part; Nom. N. Am. Birds, 1881, no. 360b, part.—COUES, Check List, 2d ed., 1882, no. 439, part.

*P[icus] r[illosus] harrisi* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.

*D[ryobates] harrisi* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 68.

*Dryobates villosus harrisi* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355, part; Man. N. Am. Birds, 2d ed., 1896, 596, exclusively.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 393c, part.—ROADS, Proc. Ac. Nat. Sci. Phila., 1893, 42 (Brit. Columbia; crit.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 52.—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 615, part (monogr.).

*D[ryobates] villosus harrisi* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.

*Dryobates villosus harrisi* ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 137, part (Kalama, Washington; Vancouver I., Westminster, and Mt. Lehman, Brit. Columbia; variations of plumages).—ANDERSON and GRINNELL, Proc. Ac. Nat. Sci. Phila., 1903, 7 (Siskiyou Mts., n. California; crit.).—JENKINS, Auk, xxiii, 1906, 168 (crit.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 186.—SWARTH, Univ. Calif. Pub. Zool., x, 1912, 33 (crit.).



[*Dendrocopus villosus*.] Subsp.  $\beta$ . *Dendrocopus harrisi* HARGITT, Cat. Birds Brit. Mus., xvii, 1890, 234, part (Vancouver I. and Orcas I. Brit. Columbia)  
 [*Dendrocopus*] *harrisi* SHARPE, Hand-list, ii, 1900, 214.

### DRYOBATES VILLOSUS SITKENSIS Swarth.

#### SITKA HAIRY WOODPECKER.

Similar to *D. v. harrisi* but under parts averaging decidedly paler and more buffy (less "smoky"), sometimes nearly white; dorsal area usually white, instead of smoky grayish; nasal tufts usually strongly buffy or tawny; wing-coverts usually spotted, more or less, with white.

*Adult male*.—Length (skins), 225–240 (228); wing, 124–130 (126.6); tail, 73–82 (77.4); culmen, 29–33.5 (31); tarsus, 20.2–23.5 (22.1); middle toe, 15–15.5 (15.2).<sup>a</sup>

*Adult female*.—Length (skins), 215–240 (222); wing, 122–128 (124.2); tail, 74–82 (79.3); culmen, 27–30 (27.8); tarsus, 20–22.5 (21.8); middle toe, 14–15.5 (14.7).<sup>b</sup>

Coast district of southeastern Alaska (Sitka; Howkan; Loring; Chilcoot; Prince of Wales, Coronation, Dall, Etolin, Boca de Quadra, Wrangell, Admiralty, Chichagoff, Baranoff, and Kuiu islands).

*Picus villosus* (not of Linnaeus) DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 274 (Sitka, Alaska).—FINSCH, Abh. Nat. Brem., iii, 1872, 60, (Sitka).—SCHALOW, Journ. für Orn., 1891, 258 (Sitka).

*Picus villosus harrisi* (not *Picus harrisi* Audubon) HARTLAUB, Journ. für Orn., 1883, 275 (Chilcoot, Alaska).

*Dryobates villosus harrisi* GRINNELL, Auk, xv, 1898, 127 (Sitka); Univ. Cal. Pub. Zool., xv, 1909, 216 (Admiralty Islands, Alaska; crit.).

*Dryobates villosus harrisi* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, 1911, 615, part (Loring, Howkan, and near Killisnoo, Admiralty Island, Alaska).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 66 (Prince of Wales, Coronation, Dall, Etolin, Boca de Quadra, Wrangell, Admiralty, Chichagoff, and Kuiu Islands, and Sitka Alaska; crit.)

*Dryobates villosus picoideus* (not *Dryobates picoideus* Osgood) OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, 616, part (Kasaan Bay, Prince of Wales Island, Alaska).

*Dryobates villosus sitkensis* SWARTH, Univ. Cal. Pub. Zool., vii, no. 9, Oct. 9, 1911, 315 (Etolin Island, Alaska; coll. Univ. Calif. Mus. Vert. Zool.).

### DRYOBATES VILLOSUS PICOIDEUS (Osgood).

#### QUEEN CHARLOTTE WOODPECKER.

Similar to *D. v. harrisi*, but white (or pale drab) of back more restricted and broken, more or less, by bars, spots, and streaks of black; lateral rectrices sometimes spotted or broadly barred with

<sup>a</sup> Ten specimens.

<sup>b</sup> Seven specimens.

black, the sides sometimes streaked and flanks barred or transversely spotted with black.

*Adult female.*<sup>a</sup>—Length (skins), 205–220 (215); wing, 121–127 (124); tail, 76–81 (79.2); exposed culmen, 25.5–27.5 (26.4); tarsus, 22–24 (22.6); outer anterior toe, 14.5–15.5 (14.8).<sup>b</sup>

Queen Charlotte Islands, British Columbia.

*Dryobates picoideus* OSGOOD, North Am. Fauna, no. 21, Sept., 1901, 44 (Cumshewa Inlet, Queen Charlotte I., Brit. Columbia; coll. U. S. Nat. Mus.).—JENKINS, Auk, xxiii, 1906, 169 (crit.).—KERMODE, Prov. Mus. Brit. Col., 1909, 49.

*Dryobates villosus picoideus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xix, 1902, 319; Check List, 3d ed., 1910, 186.—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 616, part (monogr.).

*Dryobates villosus harrisi* (not *Picus harrisi* Audubon) SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 66, part (Queen Charlotte Islands; crit.).

### DRYOBATES VILLOSUS ICASTUS Oberholser.

#### CHIHUAHUA WOODPECKER.

Similar to *D. v. hyloscopus*, but smaller and with under parts always dull white or (usually) very pale drab-grayish.

*Adult male.*—Length (skins), 185–213 (204); wing, 117–128 (123.5); tail, 67.5–76 (71.6); exposed culmen, 25.5–30.5 (28.1); tarsus, 20–21.5 (20.8); outer anterior toe, 12.5–15 (13.6).<sup>c</sup>

*Adult females.*—Length (skins), 187–209 (198); wing, 119–128.5 (123.3); tail, 70–82.5 (74.6); exposed culmen, 23–28 (25.5); tarsus, 18–22 (20.2); outer anterior toe, 12.5–14 (13.4).<sup>d</sup>

<sup>a</sup> Adult males not seen.

<sup>b</sup> Five specimens.

<sup>c</sup> Seventeen specimens.

<sup>d</sup> Twelve specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Two adult males from southern Arizona (Huachuca Mountains).....	121.7	71.2	28.7	22.2	14.5
One adult male from northern Sonora.....	124	72.5	27	21	12.5
Six adult males from Chihuahua.....	126.1	73	29	20.8	14.2
Three adult males from Durango.....	123.5	70	29.2	20.7	13.5
Three adult males from Zacatecas.....	122.7	71.5	26.7	20.1	13
Two adult males from Coahuila.....	118.5	69.5	26.2	20.5	13.2
FEMALES.					
One adult female from southwestern New Mexico (Bear Spring Mountains).....	123.5	75	27.5	20	14
Six adult females from Chihuahua.....	124.8	75.6	25.9	20.1	12.6
Two adult females from Durango.....	121	73.5	24	20.3	12.8
One adult female from northwestern Jalisco (Bolaños).....	125.5	78	24.5	18	14
One adult female from Coahuila.....	119	70	25	21	13.5

Southwestern New Mexico (Ánimas Peak; San Luís Mountains; Bear Spring Mountains) and southern Arizona (Santa Catalina Mountains; Huachuca Mountains; Pima County; Pinál County) and southward over northwestern Mexico, in States of Chihuahua (Mound Valley; Casa Colorado; Temasochi; Rio de Iglésias; Rio de Emeribano; Rio de Urique; Refúgio; Sierra Madre; Sierra de San Luís; 30 miles west of Miñaca; Colonia García; Pacheco; Rancheria de los Apaches; Piños Altos; Bustillos), eastern Sonora (El Puerto), Durango (El Salto; Arroyo del Buéy), northeastern Jalisco (Bolaños), Zacatecas (Plateado; Sierra de Valparaiso) and Coahuila (Carneros; Sierra de Guadalupe).

*Picus villosus harrisi* (not *Picus harrisi* Audubon) BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 22 (Chiricahua Mts., s. e. Arizona).—SCOTT, Auk, ii, 1885, 174, in text, 356 (Santa Catalina Mts., s. Arizona).

*Dryobates villosus harrisi* SCOTT, Auk, iii, 1886, 425 (Santa Catalina and Pinal Mts.). [*Dendrocopus villosus*.] Subsp.  $\beta$ . *Dendrocopus harrisi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 234, part (localities in Chihuahua; Ciudad Durango, Durango; Sierra de Nayarit,<sup>a</sup> Sierra Madre de Colima,<sup>a</sup> and Sierra de Valparaiso, <sup>a</sup> Jalisco?<sup>a</sup>).

*Dendrocopus harrisi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 570 (Sierra de Bolaños, Jalisco).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 431, part (Casa Colorado, Piños Altos, Temasochi, Rio de Iglesias, Rio de Emeribano, Rio de Urique, and Refugio, Chihuahua; Ciudad Durango; Sierra Bolaños, Jalisco; Valparaiso, Zacatecas; Sierra de Nayarit, Tepic?<sup>a</sup>).

*Dryobates villosus hyloscopus* (not *Dryobates hyloscopus* Cabanis and Heine) RHOADS, Proc. Ac. Nat. Sci. Phila., 1892, 116 (Santa Catalina Mts., 8,000 ft.).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 35 (El Puerto and Rancho de los Apaches, Chihuahua).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 10 (Huachuca Mts., chiefly above 7,000 ft.; crit.).—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxii, 1906, 166 (Arroyo del Buey, n. w. Durango, May 28; crit.).

*Dryobates villosus icastus* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, June 3, 1911, 597, 612, (El Salto, Durango; coll. U. S. Nat. Mus.).

### DRYOBATES VILLOSUS INTERMEDIUS Nelson.

#### INTERMEDIATE WOODPECKER.

Similar to *D. v. icastus*, but color of under parts decidedly darker (light buffy drab-gray instead of dirty white or very pale drab-grayish).

*Adult male*.—Length (skins), 202–219 (211); wing, 119–122.5 (120.7); tail, 70.5–74 (71.8); exposed culmen, 28–28.5 (28.3); tarsus, 20–21.5 (20.8); outer anterior toe, 13.5–14 (13.7).<sup>b</sup>

<sup>a</sup> Specimens from these localities not seen by me.

<sup>b</sup> Three specimens.



*Adult female*.—Length (skins), 191–201 (196); wing, 116–120.5 (118.2); tail, 74; exposed culmen, 25–25.5 (25.2); tarsus, 20.5; outer anterior toe, 13–13.5 (13.2).<sup>a</sup>

Middle eastern portion of Mexican plateau, in States of San Luís Potosí (Villár; Sierra de San Luís Potosí; mountains near Jesús Maria) and southwestern Tamaulipas (Miquihuana; Moctezuma; Galindo; Montelunga; Ciudad Victoria).

[*Dendrocopus villosus*.] Subsp.  $\beta$ . *Dendrocopus harrisi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 234, part (Sierra de San Luís Potosí).

*Dendrocopus harrisi* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 431, part (Sierra de San Luís Potosí).

*Dryobates villosus intermedius* NELSON, Auk, xvii, July, 1900, 259 (Villar, San Luís Potosí; coll. U. S. Nat. Mus.).—JENKINS, Auk, xxiii, 1906, 169 (crit.).—PHILLIPS, Auk, xxviii, 1911, 76 (Galindo and Montelunga, Tamaulipas).—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 613 (monogr.).

### DRYOBATES VILLOSUS JARDINII (Malherbe).

#### JARDINE'S WOODPECKER.

Similar to *D. v. intermedius*, but color of under parts decidedly darker, varying from buffy drab-gray to broccoli brown or drab.

*Adult male*.—Length (skins), 172–219 (197); wing, 111–124 (117.7); tail, 64.5–77 (71.5); exposed culmen, 24–28.5 (26.2); tarsus, 19.5–21.5 (20.5); outer anterior toe, 13–14.5 (13.9).<sup>b</sup>

*Adult female*.—Length (skins), 175–201 (187); wing, 110–121.5 (114.6); tail, 62–75.5 (69.5); exposed culmen, 20–25 (22.5); tarsus, 18.5–20.5 (19.5); outer anterior toe, 12–14.5 (13.4).<sup>c</sup>

<sup>a</sup> Two specimens.

<sup>b</sup> Twelve specimens.

<sup>c</sup> Fourteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Two adult males from Jalisco.....	119.5	75	27.2	20.2	14.2
One adult male from Michoacan.....	118.5	73	26.4	20.6	14
Three adult males from Guerrero.....	114.2	65.8	25.7	20.5	13.7
One adult male from Morelos.....	124	77	27.5	20	13
One adult male from Mexico.....	124	75	26	19.5	14
Four adult males from Vera Cruz.....	116.2	69.7	25.6	20.7	13.9
FEMALES.					
Two adult females from Jalisco.....	115	70.7	22	19.5	12.7
Five adult females from Michoacan.....	113	68.6	21.3	19.2	12.6
One adult female from Guerrero.....	111	68	23.5	18.5	13.5
Three adult females from Morelos.....	117.3	71	23.3	20.3	13.8
Two adult females from Mexico.....	118.5	72.7	23.4	20	13
One adult female from Vera Cruz.....	110	62	23.5	19	13

The darkest birds in the series examined are from Guerrero, Morelos, Mexico, and Vera Cruz, the palest mostly from Jalisco and Michoacán, but also from Guerrero and Vera Cruz.

Highlands of southern Mexico, in States of Vera Cruz (Orizaba; Jalapa; Miradór; El Jacale, Córdova; Las Vigas; Cofre de Perote), Puebla (San Miguel Molino; Teziutlán; Mount Orizaba), Mexico (City of Mexico; Mexicalcingo; Tlalpám; Chimalpa; San Pedro; northern slope Volcan de Toluca; Ajusco; Rio Frio; Tenango del Valle), Morelos (Popocatépetl; Huitzilác), Oaxaca (Toniagua), Guerrero (Omiteme; Amula; mountains near Chilpancingo), Michoacán (Nahuáztin; Patzcuaro; Mount Tancítaro), and Jalisco (Sierra de Colima; Volcan de Nieve).

*P[icus] (Leuconotopicus) jardinii* MALHERBE, Rev. Zool., Oct., 1845, 374 (Mexico); Mem. Acad. Metz, xxx, 1849, 327.

*Picus jardinii* MALHERBE, Mon. Pici., i, 1861, 103, iii, 1861, pl. 25, figs. 4, 5.—SCLATER, Proc. Zool. Soc. Lond., 1856, 308 (El Jacale, Cordova, Vera Cruz); 1857, 214 (Orizaba, Vera Cruz); 1859, 367 (Jalapa, Vera Cruz), 388 (Oaxaca); Cat. Am. Birds, 1862, 334 (Jalapa).—SCLATER and SALVIN, Ibis, 1859, 136, part (Orizaba).—GRAY, List Birds Brit. Mus., Piciæ, 1868, 50 (Mexico).

*P[icus] jardinii* GRAY, Gen. Birds, iii, 1849, App., p. xxi.—BONAPARTE, Consp. Av., i, 1850, 137.—SCLATER, Proc. Zool. Soc. Lond., 1864, 177 (near City of Mexico).

*[Picus] jardinii* GRAY, Hand-list, ii, 1870, 186, no. 8614.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

*Picus jardinei* CASSIN, Proc. Acad. Nat. Sci. Phila., 1863, 201 (Jalapa, Vera Cruz; crit.).—SUNDEVALL, Consp. Av. Pici., 1866, 17.

*[Phrenopicus] jardinii* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr Zygod., 1854, 8).

*D[ryobates] jardinei* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 69.

*[Dryobates] jardinei* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 214.

*[Picus villosus]* var. *jardini* RIDGWAY, Am. Journ. Sci., iv, Dec., 1872, 456, footnote, in text, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, in text, part.

*Dryobates villosus jardini* JENKINS, Auk, xxiii, 1906, 168, part (s. Mexico).

*[Dendrocopus villosus.]* Subsp. *γ. Dendrocopus jardinii* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 237, part (Valley of Mexico; Mexicalcingo, Tlalpam, Chimalpa, and San Pedro, Mexico; Tonagua, Oaxaca; Popocatépetl, Morelos; Cofre de Perote and Jalapa, Vera Cruz; San Miguel Molino, Puebla; Omiteme and Amula, Guerrero).

*Dendrocopus jardinii* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 570 (Rio Frio and Tenango del Valle, Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 432, part (localities in Vera Cruz, Puebla, Oaxaca, Guerrero, and Mexico).

*[Dendrocopus] jardinei* SHARPE, Hand-list, ii, 1900, 214.

*[Dendrocopus] jardinei* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 34, in text.

*Dryobates villosus jardinii* FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, Sept. 17, 1886, 159 (Teziutlan, Puebla).—RIDGWAY, Proc. U. S. Nat. Mus., ix, 1886, 159 (Teziutlan; crit.).—OBERHOLSER, Proc. U. S. Nat. Mus., xi, 1911, 597, 618 (monogr.).

*D[ryobates] villosus jardinei* RIDGWAY, Man. N. Am. Birds, 1887, 283, part (Vera Cruz; Puebla).

*Picus harrisii* (not of Audubon) SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (alpine reg. Vera Cruz); La Naturaleza, v, 1881, 240.

*Picus villosus*, var. *harrisi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, part (in synonymy and range).

(?) *Dryobates villosus enissomenus* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, June 3, 1911, 597, 614 (Omiteme, Guerrero; coll. U. S. Nat. Mus.).

(?) *Dryobates villosus hylobates* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, June 3, 1911, 597, 617 (Huitzilác, Morelos; coll. U. S. Nat. Mus.).

### DRYOBATES VILLOSUS SANCTORUM (Nelson).

#### TODOS SANTOS WOODPECKER.

Similar to *D. v. jardinii*, but decidedly smaller and color of under parts much darker and browner (the color usually deep broccoli brown or between broccoli brown and vandyke brown), the dorsal and subauricular stripes usually also brown instead of white.

*Adult male*.—Length (skins), 174–196 (188); wing, 107–111.5 (109.4); tail, 63–65 (63.9); exposed culmen, 23–25.5 (24.2); tarsus, 17–20 (19.2); outer anterior toe, 13–14.5 (13.7).<sup>a</sup>

*Adult female*.—Length (skins), 175–193 (186); wing, 99.5–108.5 (104.6); tail, 57.5–65 (60.9); exposed culmen, 20–23 (21.1); tarsus, 17.5–19 (18.3); outer anterior toe, 12.5–13.5 (13.1).<sup>a</sup>

Highlands of Chiapas (San Cristóbal; Pinabete; Canjób; Juncaná), Guatemala (San Gerónimo; Dueñas; Calderas, Volcan de Fuego; El Rincón de San Marcos; Santa Maria de Quezaltenango; Cuipaché; Tolimán; Chilasco; Todos Santos; near Tecpám; Hacienda Chancól; Volcan de Santa Maria), and Honduras (Taulevi; Siquatepeque).<sup>b</sup>

*Picus jardinii* (not of Malherbe) SCLATER, Proc. Zool. Soc. Lond., 1858, 359 (Taulevi, Honduras).—SCLATER and SALVIN, Ibis, 1859, 136, part (Taulevi).—TAYLOR, Ibis, 1860, 119 (Siquatepeque, Honduras).

[*Picus villosus*] var. *jardini* RIDGWAY, Am. Journ. Sci., iv, 1872, 456, footnote, in text, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, in text, part.

[*Picus jardinii* GRAY, Hand-list, ii, 1870, 186, no. 8614, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

*Dryobates villosus jardinei* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.

*Dryobates villosus jardini* JENKINS, Auk, xxiii, 1906, 168, part.

[*Dendrocopus villosus*.] Subsp. *γ. Dendrocopus jardinii* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 237, part (San Gerónimo, Dueñas, and Volcan de Fuego, Guatemala).

*Dendrocopus jardinii* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 432, part (El Rincon de San Marcos, Santa Maria de Quezaltenango, Cuipache, Toliman, Chilasco, San Gerónimo, Dueñas, and Volcan de Fuego, Guatemala; Siquatepeque, Honduras).

<sup>a</sup> Seven specimens.

<sup>b</sup> Specimens from Honduras not seen by me. They should be compared with Nicaraguan examples (*D. v. fumeus*).



*Dryobates sanctorum* NELSON, Auk, xiv, Jan., 1897, 50 (Todos Santos, Guatemala; coll. U. S. Nat. Mus.).

*Dryobates villosus sanctorum* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 92 (near Tecpam, Guatemala, 8,000 ft.).—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 619 (monogr.).

[*Dendrocopus*] *sanctorum* SHARPE, Hand-list, ii, 1900, 214.

*D*[*endrocopus*] *sanctorum* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 33, 34 in text.

### DRYOBATES VILLOSUS FUMEUS Oberholser.

#### OCOTÁL WOODPECKER.

Similar to *D. v. sanctorum*, but color of under parts averaging <sup>a</sup> decidedly paler (buffy broccoli brown or light isabella color, usually mixed with dull brownish whitish), the dorsal stripe white, more or less tinged with brown posteriorly; adult male with red nuchal band decidedly broader.

*Adult male*.—Length (skins), 170–185 (178); wing, 106–109.5 (108.1); tail, 60–63 (61.6); exposed culmen, 24.5–26 (25.1); tarsus, 18.5–19.5 (19.1); outer anterior toe, 12–14 (13.1).<sup>b</sup>

*Adult female*.—Length (skins), 167–188 (175); wing, 101–108.5 (105.3); tail, 55.5–64 (59.8); exposed culmen, 21.5–24 (22.9); tarsus, 18–19 (18.7); outer anterior toe, 13–13.5 (13.3).<sup>c</sup>

Mountains of northern Nicaragua (Jinotega; Ocotal; Matagalpa; San Rafael del Norte).

*Dendrocopus jardinii* (not *Picus jardinii* Malherbe) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 432, part (Matagalpa and San Rafael del Norte, Nicaragua).

*Dryobates villosus fumeus* OBERHOLSER, Proc. U. S. Nat. Mus., xl, no. 1840, June 3, 1911, 597, 619 (San Rafael del Norte, Nicaragua; coll. Am. Mus. Nat. Hist.).

### DRYOBATES VILLOSUS EXTIMUS Bangs.

#### BOQUETE WOODPECKER.

Similar in coloration to *D. v. sanctorum*, but dorsal stripe usually white or partly white, the wing and tail averaging slightly shorter; adult male with red nuchal band averaging decidedly broader. Similar also to *D. v. fumeus*, but wing and tail averaging slightly shorter and under parts decidedly darker.

*Adult male*.—Length (skins), 161–180 (171.3); wing, 97.5–106.5 (102.8); tail, 54.5–63 (58.6); exposed culmen, 22–26.5 (24.9); tarsus, 19–21 (19.8); outer anterior toe, 12–15 (13.8).<sup>d</sup>

<sup>a</sup> Only one among twelve adults approaches *D. v. sanctorum* in darkness of the under parts, the specimen in question being from Jinotega (Feb. 19).

<sup>b</sup> Seven specimens.

<sup>c</sup> Five specimens.

<sup>d</sup> Nineteen specimens.

*Adult female*.—Length (skins), 160–174 (169); wing, 98–105 (102.1); tail, 49–64 (58.4); exposed culmen, 21–23.5 (21.9); tarsus, 18–19.5 (18.7); outer anterior toe, 12–14 (13.1).<sup>a</sup>

Apart from the slightly shorter wing and tail there is very little by which to distinguish this form from *D. v. sanctorum*, unless it is the apparently broader red nuchal band of the adult male. I am very doubtful whether the Nicaraguan bird is really separable from the Costa Rican one. It is true that eleven of the twelve specimens examined have the under parts conspicuously paler than in most Costa Rican examples; but five of the latter (out of a series of seventy-nine) are exactly like Nicaraguan specimens in the color of the under parts, one of them (from Copéy, Dota) being even appreciably paler than the palest of the latter.

Highlands of Costa Rica (Volcan de Turrialba, 9,000–10,000 feet; Volcan de Irazú; Coliblanco; La Estrella, Azahár, and Birris, Cartago; Cervantes; San José; La Palma de San José; Cerro de la Candelária near Escazú; La Hondura; Navarro; Desengaño; Ojuras de Térraba; Las Vueltas, Copéy, Laguária, and Santa Maria, Dota), and western Panamá (Volcan de Chiriquí, 5,000–9,000 feet; Boquete, 4,000–6,000 feet).

*Picus harrisii* (not of Audubon) CABANIS, Journ. für Orn., 1862, 175 (Costa Rica; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 130 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 364 (Costa Rica).

*Picus villosus*, var. *harrisii* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 507, part (Costa Rica).

*Picus jardinii* (not of Malherbe) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 130 (San José, Cervantes, and Birris, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 364 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 212 (Volcan de Chiriqui, Panama).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 23.

[*Picus*] *jardinii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

[*Picus villosus*] var. *jardini* RIDGWAY, Am. Journ. Sci., iv, Dec., 1872, 456, footnote, in text, part (Costa Rica).

<sup>a</sup> Eighteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Twelve adult males of <i>D. v. jardinii</i> .....	117.7	71.5	26.2	20.5	13.9
Seven adult males from Guatemala and Chiapas ( <i>D. v. sancto- rum</i> ).....	109.4	63.9	24.2	19.2	13.7
Seven adult males from Nicaragua ( <i>D. v. fumeus</i> ).....	108.1	61.6	25.1	19.1	13.1
Ten adult males from Costa Rica ( <i>D. v. extimus</i> ).....	103.7	58.5	24.6	19.7	13.5
Nine adult males from western Panama ( <i>D. v. extimus</i> ).....	101.7	57.3	25.3	20	14.1
FEMALES.					
Seven adult females of <i>D. v. jardinii</i> .....	114.6	69.5	22.5	19.5	13.4
Seven adult females from Guatemala and Chiapas ( <i>D. v. sanc- torum</i> ).....	104.6	60.9	21.1	18.3	13.1
Five adult females from Nicaragua ( <i>D. v. fumeus</i> ).....	105.3	59.8	22.9	18.7	13.3
Ten adult females from Costa Rica ( <i>D. v. extimus</i> ).....	102	57.8	21.7	18.5	13.1
Eight adult females from western Panama ( <i>D. v. extimus</i> ).....	102.3	59.3	22.3	19	13.3

- Dyctiopicus jardinei* BOUCARD, Proc. Zool. Soc. Lond., 1878, 49 (Navarro and Volcan de Irazú, Costa Rica).
- Dendrocopus jardini* ZELEDÓN, Proc. U. S. Nat. Mus., viii, no. 7, May 23, 1885, 111 (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 432, part (Desengaño, Cerro de la Candelaria, San José, Volcan de Irazú, Navarro, Cervantes, and Birris, Costa Rica; Volcan de Chiriqui, Panama).
- [*Dendrocopus villosus*.] Subsp. *γ*. *Dendrocopus jardini* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 237, part (Costa Rican localities).
- Dryobates jardini* ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Volcan de Irazú).—CHERRIE, Auk, ix, 1892, 327 (San José, Costa Rica).
- D[ryobates] villosus jardinei* RIDGWAY, Man. N. Am. Birds, 1887, 283, part (Costa Rica; "Veragua").
- Dryobates villosus jardini* JENKINS, Auk, xxiii, 1906, 168, part (Costa Rica; crit.).
- Dendrocopus villosus extimus* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 33 (Boquete, Chiriqui, w. Panama, 6,000 ft. alt.; coll. E. A. and O. Bangs).
- Dryobates villosus extimus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 588 (Costa Rica; habits).—FERRY, Pub. 146, Field Mus. N. H., Orn. Ser., i, no. 6, 1910, 266 (Coliblanco, Costa Rica).—OBERHOLSER, Proc. U. S. Nat. Mus., xl, 1911, 597, 620 (monogr.).

### DRYOBATES PUBESCENS PUBESCENS (Linnæus).

#### SOUTHERN DOWNY WOODPECKER.

*Adult male*.—Pileum, auricular region, median portion of hindneck, sides of interscapular region, scapulars, and upper tail-coverts, black, faintly glossed with bluish; four middle rectrices black, without gloss; wings dull black, passing into dark brownish slaty on primary coverts and terminal portion of primaries, the middle coverts with a rather large mesio-terminal roundish, guttate, or cuneate spot of white and a sub-basal roundish or transverse spot of the same; greater coverts with a roundish subterminal spot of white on outer web and a sub-basal roundish spot (concealed) of same on both webs; secondaries crossed by four transverse series of roundish white spots, the first concealed by greater coverts, the last smaller and terminal; outer webs of primaries with similar but more elongate and quadrate spots, about four in number on longest quills besides a smaller terminal spot or margin; a broad median stripe of white on back, this sometimes slightly streaked or flecked with black; two lateral rectrices, on each side, white or dull white, with two <sup>a</sup> broad black bars across distal portion, the proximal one usually broken or interrupted; third rectrix with distal half, more or less, of outer web white, the terminal portion of inner web with one or more broad white bars or spots; nasal tufts dull white, the bristle-like shafts black terminally; a white supra-auricular stripe, continued, narrowly, above eye, its posterior end in contact with a bright red nuchal band; a broad subauricular stripe of white, extend-

<sup>a</sup> Sometimes there are more or less distinct indications of a third incomplete bar.



ing anteriorly, beneath eye, to lores, where confluent with the duller white of nasal tufts, its posterior end involving sides of neck, including post-auricular region, except upper portion; malar region grayish, intermixed with black, anteriorly (sometimes wholly black except extreme anterior portion), posteriorly continued as a gradually widening "solid" black stripe which curves upward behind the white cervical area and connects with the black of back; under parts plain pale brownish gray or dull grayish white, more whitish on chin and throat, the under tail-coverts usually barred or flecked with black; under wing-coverts mostly immaculate dull white, but with a black patch on carpo-metacarpal region; inner webs of remiges dull slaty with large semiquatrate spots of white, except on distal portion of longer primaries; bill dark horn grayish, paler on mandible; iris brown or reddish brown; legs and feet dusky (olive-grayish in life); length (skins), 139–155 (145.7); wing, 86–91 (88.6); tail, 48–53 (50.5); exposed culmen, 15–16.5 (15.7); tarsus, 15–16.5 (15.9); outer anterior toe, 9.5–11 (10.5).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without any red on head, the red nuchal band replaced by a white one, this usually divided by a median black area; length (skins), 139–153 (144); wing, 86.5–91 (88.7); tail, 48–54.5 (51.6); exposed culmen, 14–16.5 (15.2); tarsus, 14.5–16 (15.3); outer anterior toe, 9.5–11 (10.1).<sup>b</sup>

<sup>a</sup> Fourteen specimens (ten from Florida, four from southern Georgia).

<sup>b</sup> Thirteen specimens (ten from Florida, three from southern Georgia).

The extreme difficulty of satisfactorily separating this species into two or more subspecies and defining their respective ranges with even approximate accuracy is quite as great as in the case of *D. villosus* (see p. 203), the two cases being exactly parallel, as the following measurements will show:

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Nine adult males from interior of Alaska ( <i>D. p. nelsoni</i> ).....	99.2	62.6	16.6	16.2	10.6
Three adult males from Kenai Peninsula, etc., Alaska ( <i>D. p. glacialis</i> ).....	96	58.7	16.3	16.8	10.5
Two adult males from Kadiak Island, Alaska ( <i>D. p. medianus</i> ??)	94.7	60	16.5	15.7	10.5
Four adult males from Mackenzie ( <i>D. p. nelsoni</i> ).....	98.8	63	17	16.1	10.2
Two adult males from Athabasca, June ( <i>D. p. nelsoni</i> ).....	98.7	65.7	17.5	15.5	10
One adult male from Saskatchewan, May 31 ( <i>D. p. nelsoni</i> )....	96.5	62.5	17.5	15.5	10.5
One adult male from Minnesota, May 23 ( <i>D. p. medianus</i> ).....	92	53.5	17	16	10.5
Four adult males from Newfoundland ( <i>D. p. medianus</i> ?).....	95.4	59.9	15.9	16	10.3
Two adult males from Maine, April ( <i>D. p. medianus</i> ).....	94.2	57.5	16.7	16.2	10.5
One adult male from New Hampshire, June ( <i>D. p. medianus</i> )..	93.5	58	16	16	11
Six adult males from Massachusetts, March-June ( <i>D. p. medianus</i> ).....	95.2	56.3	16.5	15.7	10.3
One adult male from New York, April, August ( <i>D. p. medianus</i> )	93	52.5	16.5	16.5	11
Three adult males from Pennsylvania, March, April, July ( <i>D. p. medianus</i> ).....	93	54.3	16.5	16.3	10.8
One adult male from northeastern Illinois, June ( <i>D. p. medianus</i> )	95	56	17	16.5	11

*Young male*.—Similar to the adult male, but without the red nuchal band, the occiput and more or less of crown, however, with feathers tipped with red (usually more or less pale), the crown often dotted with white; black areas duller (without gloss); under parts sometimes more or less streaked on chest and flanks.

*Young female*.—Similar to the young male, but without any red on head.

Lower portion of Lower Austral Zone, from Florida and coast lowlands of Georgia and South Carolina along Gulf coast to southeastern Texas; grading into *D. p. medianus* along northern edge of Lower

Footnote—Continued.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES—continued.					
One adult male from northwestern Iowa, June ( <i>D. p. medianus</i> ).....	94.5	58	16	16	10
Two adult males from eastern Kansas, July ( <i>D. p. pubescens?</i> ).....	91.5	54	15.5	16.5	10.2
Eleven adult males from southeastern Illinois and southwestern Indiana ( <i>D. p. pubescens?</i> ).....	91.7	54.1	16.1	16.1	10.6
Six adult males from Virginia, Maryland, and District of Columbia ( <i>D. p. pubescens?</i> ).....	91.7	50.8	17.1	15.9	10.7
Two adult males from western North Carolina, May ( <i>D. p. medianus?</i> ).....	92.5	53.5	16.7	16	10.7
Five adult males from northern South Carolina, January, February ( <i>D. p. pubescens?</i> ).....	91.2	53	16	15.6	10.3
Two adult males from eastern Tennessee, April 15 ( <i>D. p. pubescens?</i> ).....	91	50	17	16	10
One adult male from Oklahoma, May ( <i>D. p. pubescens</i> ).....	90.5	48	17.5	16.5	10.5
Five adult males from Texas, March, April, December ( <i>D. p. pubescens</i> ).....	88.7	51.9	16.6	15.8	10.4
Four adult males from Louisiana ( <i>D. p. pubescens</i> ).....	86.6	49.9	15.4	15.4	10.1
One adult male from Mississippi, April ( <i>D. p. pubescens</i> ).....	90	55	17	16	9.5
One adult male from Alabama, summer ( <i>D. p. pubescens</i> ).....	89	53	16	16	11
One adult male from northern Georgia ( <i>D. p. medianus?</i> ).....	93	53	16	16.5	11
Four adult males from southeastern Georgia ( <i>D. p. pubescens</i> ).....	89.2	51.4	15.4	15.8	10.2
Ten adult males from Florida, January, February, March ( <i>D. p. pubescens</i> ).....	88.3	50.2	15.8	15.9	10.5
FEMALES.					
Two adult females from interior Alaska ( <i>D. p. nelsoni</i> ).....	100.5	67.5	15.7	15.7	10
Three adult females from Kenai Peninsula, Alaska ( <i>D. p. glacialis</i> ).....	97.2	61.2	16.5	16.5	10.7
Two adult females from Kadiak Island, Alaska ( <i>D. p. medianus??</i> ).....	94.7	59.7	16.2	15.7	10.2
Three adult females from Mackenzie ( <i>D. p. nelsoni</i> ).....	100	64.3	15.7	15.3	10.2
One adult female from Alberta, February ( <i>D. p. nelsoni?</i> ).....	97	63	16	15.5	10
Three adult females from Minnesota, April ( <i>D. p. nelsoni?</i> ).....	97.5	59.7	16.3	16.3	10.2
Two adult females from Newfoundland ( <i>D. p. medianus?</i> ).....	96.5	59.5	15.8	15.5	10
One adult female from Wisconsin, October ( <i>D. p. nelsoni</i> ).....	98	63.5	16.2	15	10
Two adult females from Maine, April ( <i>D. p. medianus?</i> ).....	97	58.7	16.2	16	10
Nine adult females from Massachusetts, April, May ( <i>D. p. medianus</i> ).....	95.2	57.8	15.7	15.8	10.5
Two adult females from interior New York, winter ( <i>D. p. medianus</i> ).....	96.5	57.7	15.2	15.5	10

Austral Zone, where specimens are practically identical except in slightly greater size.

[*Picus pubescens* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 175 (based on *The Smallest Spotted Woodpecker* Catesby, Nat. Hist. Carolina, i, 21).—GMELIN, Syst. Nat., i, pt. i, 1788, 435.—LATHAM, Index Orn., i, 1790, 232.—GRAY, Hand-list, ii, 1870, 184, no. 8590, part.—COUES, Key N. Am. Birds, 1872, 194, part.

*Picus pubescens* VIEILLLOT, Ois. Am. Sept., ii, 1807, 65, pl. 121; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 82.—WILSON, Am. Orn., i, 1807, 153, part, pl. 9, fig. 4.—STEPHENS, Shaw's Gen. Zool., ix, 1815, 170, part.—BONAPARTE, Obs. Wilson's Am. Orn., 1826, [240], part; Ann. Lyc. N. Y., ii, pt. i, 1826 (Synop. Birds U. S.) 46, part; Geog. and Comp. List, 1838, 39, part.—LESSON, Traité d'Orn., 1831, 228.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 576; 2d ed., 1840, 687; Water Birds, 1834, 600.—AUDUBON, Orn. Biog., ii, 1834, 81, pl. 112; v, 1839, 539; Synopsis, 1839, 180; Birds Am., oct. ed., iv, 1842, 249, pl. 263.—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 89, part (Indian Territory; Texas).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 89, part; Cat. N. Am. Birds, 1859, no. 76, part.—MALHERBE, Mon. Pict., i, 1861, 119; iii, 1861, pl. 29, figs. 8, 9.—

Footnote—Continued.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
FEMALES—continued.					
Two adult females from Long Island, New York ( <i>D. p. medianus</i> ).....	93.7	54.2	15.2	16.2	10.5
Five adult females from Pennsylvania ( <i>D. p. medianus</i> ).....	93.6	54.7	16.9	15.5	10.1
One adult female from northeastern Illinois, June ( <i>D. p. medianus</i> ).....	91	55	15.5	15	10.5
One adult female from eastern Kansas, July ( <i>D. p. pubescens?</i> ).....	89	.....	16	15	10
Eight adult females from southeastern Illinois and southwestern Indiana ( <i>D. p. pubescens?</i> ).....	92.4	54.3	15.9	15.6	10.2
Three adult females from coast of Virginia, May, June ( <i>D. p. pubescens?</i> ).....	92	53.7	16	15.8	10.3
One adult female from western North Carolina, July ( <i>D. p. medianus</i> ).....	96.5	57	16.5	15.5	10.5
Two adult females from eastern Tennessee, March, April ( <i>D. p. medianus?</i> ).....	93	55	15.7	16	10.5
One adult female from Indian Territory, August ( <i>D. p. pubescens?</i> ).....	91	52	16	16.5	11
Four adult females from Texas, January, March, April, August ( <i>D. p. pubescens</i> ).....	90.7	54.6	15.9	15.7	10.1
Two adult females from Louisiana ( <i>D. p. pubescens</i> ).....	88.7	55.5	15.5	15.2	9.7
Three adult females from northern South Carolina, January, February ( <i>D. p. pubescens?</i> ).....	92.2	55.2	15.3	15.5	10.2
Two adult females from southeastern South Carolina ( <i>D. p. pubescens</i> ).....	90.7	54.5	16.2	15.2	10.5
Three adult females from southeastern Georgia ( <i>D. p. pubescens</i> ).....	89	55	15.2	15	10.2
Ten adult females from Florida ( <i>D. p. pubescens</i> ).....	88.5	51.2	15.2	15.4	10

Concerning certain of the above measurements, it may be stated that the female from northeastern Illinois has the wing exceptionally short for a northern bird, but this may be to some extent due to wearing; and that the series from southeastern Illinois and southwestern Indiana (both males and females) includes more winter than spring or summer birds, most of them being from Wabash County, Illinois, and Knox County, Indiana.



- SCLATER, Cat. Am. Birds, 1862, 334, part (synonymy only).—(?)DRESSER, Ibis, 1865, 468 (near San Antonio, Texas, winter).—SUNDEVALL, Consp. Av. Picin., 1866, 17, part.—COUES, Check List, 1873, no. 299, part; 2d ed., 1882, no. 440, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 509, part.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 361, part.—OGILBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 57 (Navarro Co., Texas, resident).—(?)BROWN (N. C.), Auk, i, 1884, 122 (Boerne, Kendall Co., Texas, 1 spec., Feb. 3).—SCOTT, Auk, vi, 1889, 251 (Tarpon Springs and Punta Rasa, Florida).—BEYER, Proc. Louisiana Soc. Nat. for 1897-99 (1900), 102 (Louisiana, resident).
- P[icus] pubescens* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1311.—BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 369, part; Obs. Wils. Am. Orn., 1826, [30], part; Consp. Av., i, 1850, 138, part.—GRAY, Gen. Birds, ii, 1845, 435, part.—COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 377, part (Illinois).—KOPMAN, Gulf Fauna and Flora Bull., i, no. 2, 1899, 57 (s. Louisiana, resident).
- [Picus pubescens]* var. *pubescens* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 501, part.
- [Trichopicus] pubescens* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Voluc. Zygod., 1854, 8), part.
- Picus (Trichopicus) pubescens* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvi, part.
- D[ryobates] pubescens* BOIE, Isis, 1826, 977; 1828, 326.—CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 62, part (syn. only).—RIDGWAY, Man. N. Am. Birds, 1887, 283, part.
- Dryobates pubescens* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 394, part.—(?)LLOYD, Auk, iv, 1887, 190 (Tom Green and Concho Counties, w. Texas).—(?)BECKHAM, Proc. U. S. Nat. Mus., x, 1888, 663 (San Antonio, Texas, 2 specs., Feb.).—SINGLEY, Rep. Geol. Surv. Texas, 1894, 350 (Lee Co., Texas, resident).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 55, part, pl. 1, fig. 24 (Florida).
- Dryobates pubescens pubescens* (not of Oberholser, 1896) AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 187.
- [Picus pubescens]* a. *pubescens* COUES, Birds Northwest, 1874, 282, part.
- Dendrocopus pubescens* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 238, part (Miami, Florida), 571 (Tarpon Springs, Florida).
- [Dendrocopus] pubescens* SHARPE, Hand-list, ii, 1900, 214.
- Picus (Dendrocopus) meridionalis* SWAINSON, Fauna Bor.-Am., ii, 1831, 308 (Georgia).—NUTTALL, Man. Orn. U. S. and Can., Water Birds, 1834, 601; Land Birds, 2d ed., 1840, 690.
- P[icus] meridionalis* GRAY, Gen. Birds, ii, 1845, 435.—BONAPARTE, Consp. Av., i, 1850, 138.
- [Picus] meridionalis* REICHENBACH, Handb. Scans., Picinæ, 1854, 375.—GRAY, Hand-list, ii, 1870, 184, no. 8595.
- Picus meridionalis* NUTTALL, Man. Orn. U. S. and Can., Water Birds, 1834, 601.—MALHERBE, Mon. Pict., i, 1861, 124.
- [Dendrocopus] meridionalis* SHARPE, Hand-list, ii, 1900, 214.
- Dryobates pubescens meridionalis* OBERHOLSER, Proc. U. S. Nat. Mus., xviii, June 24, 1896, 547 (monogr.).
- [Trichopicus] meridionalis* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Voluc. Zygod., 1854, 8).
- Picus lecontei* JONES, Ann. Lyc. Nat. Hist. N. Y., iv, 1848, 489, pl. 17 (Liberty Co., Georgia; abnormal specimen with only three toes).
- Picus lecontei* BAIRD, in Rep. Stansbury's Surv. Gt. Salt Lake, 1852, 333 (Georgia).
- [Tridactylia] lecontei* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Voluc. Zygod., 1854, 8).
- Picoides lecontei* MALHERBE, Mon. Pict., i, 1861, 182; iii, 1861, pl. 22, fig. 3.
- (?)*Dryobates pubescens medianus* (not *Picus medianus* Swainson?) FERRY, Auk, xxiv, 1907, 432 (Cairo, Illinois, Aug.).

## DRYOBATES PUBESCENS MEDIANUS (Swainson).

## DOWNY WOODPECKER.

Similar to *D. p. pubescens*, but larger, and the whitish of under parts, etc., slightly paler (more nearly white).

*Adult male*.—Length (skins), 145–161 (153); wing, 91–96.5 (94.1); tail, 51–60.5 (55.8); exposed culmen, 15–17.5 (16.4); tarsus, 15–16.5 (16); outer anterior toe, 10–11 (10.5).<sup>a</sup>

*Adult female*.—Length (skins), 145–161 (153); wing, 91.5–97 (94.7); tail, 50.5–61.5 (56.4); exposed culmen, 14.5–17.5 (15.4); tarsus, 15–16.5 (15.4); outer anterior toe, 9.5–11 (10.4).<sup>b</sup>

Upper Austral Zone and part of Transition Zone of eastern North America, from southeastern Virginia (Dismal Swamp), highlands of North and South Carolina, northern Georgia, eastern Tennessee, southern Illinois and Indiana, eastern Kansas, etc., northward to about northern border of United States and maritime provinces of Canada to Newfoundland; grading into *D. p. nelsoni* northward, into *D. p. pubescens* southward; westward to eastern portion of Great Plains, occasionally to base of Rocky Mountains (Denver, Colorado, May); Kodiak Island, Alaska (resident).<sup>c</sup>

*Picus pubescens* (not of Linnæus) WILSON, Am. Orn., i, 1807, 153, part, pl. 9, fig. 4.—VIEILLOT, Ois. Am. Sept., ii, 1807, 65, part, pl. 121; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 82, part.—STEPHENS, Shaw's Gen. Zool., ix, 1815, 170, part.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 46, part; Synopsis Birds U. S., 1828, 46, part; Obs. Wilson's Am. Orn., 1826, [240], part; Geog. and Comp. List, 1838, 39, part.—LESSON, Traité d'Orn., 1831, 228, part.—NUTTALL, Man. Orn. U. S. and Can., i, 1832, 576, part.—AUDUBON, Orn. Biog., ii, 1834, 81, part, pl. 112; v, 1839, 539, part; Synopsis, 1839, 180, part; Birds Am., oct. ed., iv, 1842, 249, part, pl. 263.—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 89, part (Indian Territory; Texas).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 89, part; Cat. N. Am. Birds, 1859, no. 76, part.—MALHERBE, Mon. Pict., i, 1861, 119, part; iii, 1861, pl. 29, figs. 8, 9.—SCLATER, Cat. Am. Birds, 1862, 334, part (eastern North America).—SUNDEVALL, Consp. Av. Picin., 1866, 17, part.—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 129 (Topeka and Leavenworth, e. Kansas, May; crit.).—COUES, Check List, 1873, no. 299, part; 2d ed., 1882, no. 440, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 509, part.—MEARNS,

<sup>a</sup> Thirteen specimens, from Massachusetts (6), New York (2), Pennsylvania (3), Wisconsin (1), and Iowa (1).

<sup>b</sup> Eighteen specimens, from Massachusetts (9), New York (4), and Pennsylvania (5). In the series from Massachusetts are several specimens which closely approach *D. p. nelsoni* in dimensions.

<sup>c</sup> I am not able to detect the minutest difference, in any respect, between Kodiak examples of this species and specimens of true *D. p. medianus* from the northeastern United States, and therefore, notwithstanding the puzzle of geographic distribution involved in the case, I do not know what else to do with these Kodiak birds than to refer them (provisionally, at least) to *D. p. medianus*.

An adult male from Saturna Island, British Columbia, taken Feb. 3, 1894, in the Bangs collection (no. 4508), is exactly like Kodiak specimens, and may be a migrant from there.

- Bull. Nutt. Orn. Club, iii, 1878, 71 (descr. young female with red on nape).—  
 BREWSTER, Ann. Lyc. N. Y., xi, 1875, 144 (Ritchie Co., West Virginia);  
 Bull. Nutt. Orn. Club, iii, 1878, 179 (descr. young).—DALGLEISH, Bull.  
 Nutt. Orn. Club, v, 1880, 74 (accidental in England).—RIDGWAY, Proc.  
 U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 361, part.—  
 BICKNELL, Auk, ii, 1885, 257 (notes).
- Picus (Dendrocopus) pubescens* SWAINSON, Fauna Bor.-Am., ii, 1831, 307, part.  
*Dendrocopus pubescens* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 238, part  
 (localities in Illinois, Indiana, New York, Massachusetts, Connecticut, New  
 Jersey, District of Columbia, and Virginia).
- [*Dendrocopus*] *pubescens* SHARPE, Hand-list, ii, 1900, 214.
- [*Picus pubescens*] a. *pubescens* COUES, Birds Northwest, 1874, 282, part.
- P[icus] pubescens* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 369,  
 part; Obs. Wilson's Am. Orn., 1826, [30], part; Consp. Av., i, 1850, 138,  
 part.—GRAY, Gen. Birds, ii, 1845, 435, part.—MAXIMILIAN, Journ. für Orn.,  
 1858, 354 (Wabash and Missouri).—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 377,  
 part (Illinois).—COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.
- [*Picus*] *pubescens* LAWRENCE, Ann. Lyc. N. Y., \*viii, 1866, 291 (vicinity of New  
 York City).—GRAY, Hand-list, ii, 1870, 184, no. 8590, part.—COUES, Key N.  
 Am. Birds, 1872, 194, part.—D'HAMONVILLE, Cat. Ois. Eur., 1876, 10 (acci-  
 dental in England).
- [*Picus pubescens*] var. *pubescens* BAIRD, BREWER, and RIDGWAY, Hist. N. Am.  
 Birds, ii, 1874, 501, part.
- [*Trichopicus*] *pubescens* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Voluc.  
 Zygod., 1854, 8), part.
- Picus (Trichopicus) pubescens* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvi,  
 part.
- D[ryobates] pubescens* BOIE, Isis, 1826, 977, part; 1828, 326, part.—CABANIS and  
 HEINE, Mus. Hein., iv, heft 2, 1863, 62, part (N. America).—RIDGWAY, Man.  
 N. Am. Birds, 1887, 283, part.
- Dryobates pubescens* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d  
 ed., 1985), no. 394, part.—BREWSTER, Auk, iii, 1886, 104 (mts. of w. North  
 Carolina, 4,000 ft.).—SENNETT, Auk, iv, 1887, 242 (mts. of w. North Carolina,  
 6,100 ft.).—(?) ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon).—RIDG-  
 WAY, Orn. Illinois, i, 1889, 378, part.—THORNE, Auk, xii, 1895, 214 (Ft. Keogh,  
 e. Montana, resident).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 55, part.—  
 COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 82 (Colorado).—PORTER, Auk,  
 xvii, 1900, 72 (Newfoundland).—(?) RATHBUN, Auk, xix, 1902, 135 (Seattle,  
 Washington, 1 spec., Feb. 20, 1892).—BEAL, Bull. 37, U. S. Biol. Surv., 1911,  
 17, pl. 1, lower fig. (food).
- Picus (Dendrocopus) medianus* SWAINSON, Fauna Bor.-Am., ii, 1831, 308 (New  
 Jersey).—NUTTALL, Man. Orn. U. S. and Can., Water Birds, 1834, 601.
- Picus medianus* MALHERBE, Mon. Picid., i, 1861, 122.
- P[icus] medianus* GRAY, Gen. Birds, ii, 1845, 435.—BONAPARTE, Consp. Av., i,  
 1850, 138.
- [*Picus*] *medianus* REICHENBACH, Handb. Scans., Picinae, 1854, 375.—GRAY,  
 Hand-list, ii, 1870, 184, no. 8594.
- [*Trichopicus*] *medianus* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Voluc.  
 Zygod., 1854, 8).
- Dryobates pubescens medianus* BREWSTER, Auk, xiv, Jan., 1897, 82, in text.—  
 AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 120 (check  
 list no. 394c); 3d ed., 1910, 187.—MORRELL, Auk, xvi, 1899, 251 (Nova  
 Scotia, resident).—CARY, Auk, xviii, 1901, 233 (Black Hills, Wyoming).—  
 PREBLE, North Am. Fauna, no. 22, 1902, 111 (Moose Factory; s. Keewatin).—  
 ADAMS, Ecol. Surv. N. Mich., 1906, 115 (Porcupine Mts., n. Michigan).



summer).—ANDERSON, Proc. Davenp. Ac. Sci., xvi, 1907, 274 (Iowa).—TOWNSEND and ALLEN, Proc. Bost. Soc. N. H., xxxiii, 1907, 376 (s. Labrador, s. of 56°).—EMBODY, Auk, xxvii, 1910, 172 (Hanover Co., Virginia, resident).—FERRY, Auk, xxvii, 1910, 199 (Prince Albert, Saskatchewan, breeding).—HOWELL, Auk, xxvii, 1910, 296 (Barboursville, etc., Kentucky), 301 (Cross Mt., 3,400 ft., and Walden Ridge, e. Tennessee), 383 (St. Francis River, s. e. Missouri, breeding).—(?) JEWETT, Condor, xiv, 1912, 192 (Sawtooth Mts., Idaho, late fall).

## KODIAK REFERENCES.

*Picus pubescens* (not of Linnæus) BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 509, part (Kodiak).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 156, part (Kodiak).

## DRYOBATES PUBESCENS NELSONI Oberholser.

## NORTHERN DOWNY WOODPECKER.

Similar to *D. p. medianus*, but decidedly larger, white of under parts, etc., purer, and black bars on lateral rectrices usually narrower or less numerous, sometimes nearly obsolete.

*Adult male*.—Length (skins), 147–162 (159); wing, 95–101.5 (99.1); tail, 58.5–67 (63.1); exposed culmen, 16–18 (17); tarsus, 15.5–17 (16.2); outer anterior toe, 10–11 (10.5).<sup>a</sup>

*Adult female*.—Length (skins), 155–168 (161); wing, 97–101.5 (98.8); tail, 57–72 (63.3); exposed culmen, 15–16.5 (15.9); tarsus, 15–16.5 (15.7); outer anterior toe, 9.5–10.5 (10.1).<sup>b</sup>

<sup>a</sup> Twenty-one specimens.<sup>b</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Nine adult males from interior Alaska.....	99.2	62.6	16.6	16.2	10.6
Four adult males from Mackenzie.....	98.8	63	17	16.1	10.2
Two adult males from Athabasca.....	98.7	65.7	17.5	15.5	10
Five adult males from eastern Montana (January, April, May, December).....	99	62.4	17.3	16.6	10.8
One adult male from eastern Wyoming (October).....	101	64.5	17.5	16.7	10.5
FEMALES.					
Two adult females from western and interior Alaska.....	100.5	67.5	15.7	15.7	10
Three adult females from Mackenzie.....	100	64.3	15.7	15.3	10.2
One adult female from Alberta (February).....	97	63	16	15.5	10
Three adult females from Minnesota (Fort Snelling, Apr. 13)...	97.5	59.7	16.3	16.3	10.2
One adult female from Wisconsin (Kenosha, October).....	98	63.5	16	15	10
One adult female from New York (Locust Grove, Apr. 10)....	100	62	16	16.5	10.5

Many winter specimens from eastern Massachusetts closely approach this form in size and agree exactly in coloration, measurements being as follows:

Three adult males from eastern Massachusetts (November): Wing, 97.5; tail, 57.2; exposed culmen, 16.5; tarsus, 15.8; outer anterior toe, 10.7.

Three adult females from eastern Massachusetts (November, December, January): Wing, 96.5; tail, 59.8; exposed culmen, 15.7; tarsus, 15.8; outer anterior toe, 10.5.

Northern portion of Canadian Zone, and western part of Hudsonian Zone east of Rocky Mountains, from ~~the Kowak River~~, shores of Norton and Kotzebue Sounds and Kuskokwim Bay through the Yukon Valley, Alaska, Yukon and Mackenzie, southward in winter through Athabasca, Alberta, Saskatchewan, Manitoba, etc., to eastern Montana (Ft. Keogh; Ft. Custer), eastern Wyoming (sources of Cheyenne River), Minnesota (Ft. Snelling), Wisconsin (Kenosha), and northern New York (Locust Grove).<sup>a</sup>

*Picus pubescens* (not of Linnæus) BLAKISTON, Ibis, 1862, 3 (Forks of Saskatchewan); 1863, 51 (Mackenzie R., etc.; habits).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 274 (Ft. Yukon to Nulato, Alaska).—COUES, Check List, 1873, no. 299, part; 2d ed., 1882, no. 439, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 509, part.—RIDGWAY, Nom. N. Am. Birds, 1881, no. 361, part.—(?)MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 236 (Point de Monts, Quebec).—(?)STEARNS, Proc. U. S. Nat. Mus., vi, 1883, 118 (Eskimo R., Labrador).—NELSON, Cruise of "Corwin," 1881 (1883), 74 (St. Michael, Yukon and Kuskokwim rivers, and Kotzebue Sound, Alaska).—McLENNAN, Cruise "Corwin," 1884, 117 (Kowak R., n. w. Alaska).

[*Picus*] *pubescens* COUES, Key N. Am. Birds, 1872, 194, part.

[*Picus*] *pubescens* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.

[*Picus pubescens*] *a. pubescens* COUES, Birds Northwest, 1874, 282, part.

*Picus* (*Dendrocopus*) *pubescens* SWAINSON, Fauna Bor.-Am., ii, 1831, pp. xxvi, 307, part.

*Dryobates pubescens* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 394, part.—TURNER, Contr. Nat. Hist. Alaska, 1886, 166 (Yukon Valley and St. Michael, Alaska).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 156, part (Yukon Valley).

[*Dryobates*] *pubescens* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.

*Dryobates pubescens nelsoni* OBERHOLSER, Proc. U. S. Nat. Mus., xviii, June 24, 1896, 549 (Nulato, Alaska; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 120 (check list no. 394d); Check List, 3d ed., 1910, 187.—FISHER (W. K.), Condor, iv, 1902, 69 (diagnosis).—PREBLE, North Am. Fauna, no. 27, 1908, 380 (near Peace R., lower Athabasca; localities in Mackenzie basin).—(?)VISHER, Auk, xxvi, 1909, 148 (Black Hills, w. South Dakota, rare resident).—STANSILL, Auk, xxvi, 1909, 395 (centr. Alberta).

[*Dendrocopus*] *nelsoni* SHARPE, Hand-list, ii, 1900, 214.

### DRYOBATES PUBESCENS HOMORUS (Cabanis and Heine).

#### BATCHELDER'S WOODPECKER.

Similar in large size and whiteness of under parts <sup>b</sup> to *D. p. nelsoni*, but with less of white on wing-coverts, sometimes with none, the spots, when present, only on terminal or (usually) subterminal portion, and on only a few of the covert feathers.

<sup>a</sup> Many winter specimens from eastern Massachusetts, etc., are precisely like typical *D. p. nelsoni* in coloration and very nearly as large, and probably should be referred to that subspecies. Certainly they are much nearer *D. p. nelsoni* than to *D. p. medianus* from Pennsylvania, etc.

<sup>b</sup> Also in tendency to reduction or absence of bars on lateral rectrices.

*Adult male*.—Length (skins), 145–167 (156); wing, 94.5–103.5 (99.3); tail, 58–68 (62.3); exposed culmen, 16–18 (17.1); tarsus, 15.5–17 (16.5); outer anterior toe, 10–11 (10.5).<sup>a</sup>

*Adult female*.—Length (skins), 149–161 (158); wing, 95–105.5 (100.9); tail, 61–66.5 (63.9); exposed culmen, 15.5–18 (16.7); tarsus, 15.5–17 (16.2); outer anterior toe, 9.5–11 (10.3).<sup>a</sup>

Transition and Canadian zones of western North America, from southern British Columbia east of Cascade Mountains (Lake La Hache; Vernon; Buonaparte; Caribou District; Ducks; Chilliwack; Okanogan) and southward over Rocky Mountains and contiguous ranges to mountains of New Mexico and Arizona (breeding); west to middle Washington (Yakima, breeding; Okanogan County) and (at least in fall and winter) mountains of eastern California (Quincy, Plumas County, April; Piute Mountains; Kernville; Fort Tejon); east to eastern Montana (Fort Keogh, breeding) and western Nebraska.

(?)*Picus leucurus* HARTLAUB, Naumannia, ii, heft 2, 1852, 55 (Rocky Mts.; ex Paul von Württemberg, manuscript).

(?)*P[icus] leucurus* SUNDEVALL, Consp. Av. Picin., 1866, 18.

(?)*[Trichopicus] leucurus* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).

(?)*D[ryobates] leucurus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 65.

*Dryobates pubescens leucurus* FISHER (W. K.), Condor, iv, May, 1902, 69.—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 37 (California range).

*Picus gairdneri* (not of Audubon) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 91, part (Laramie R. and Ft. Laramie, Wyoming).—COOPER, Orn. Cal., 1870, 377, part (Rocky Mts.).—AIKEN, Proc. Bost. Soc. N. H., xv, 1872, 206 (e. Colorado, winter).—RIDGWAY, Field and Forest, ii, 1877, 209 (Colorado); Orn. 40th Parallel, 1877, 546 (upper Humboldt Valley, Nevada, and Parleys Park, Utah).

*P[icus] gairdneri* COUES, Ibis, 1865, 162, in text (Ft. Whipple, Arizona).

*[Picus pubescens.]* Var. *gairdneri* COUES, Key N. Am. Birds, 1872, 194, part.

*Picus pubescens gairdneri* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 22, 34 (upper Humboldt Valley; Parleys Park); Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 361a, part.—DREW, Bull. Nutt. Orn. Club, vi, 1881, 141 (San Juan Co., Colorado); Auk, ii, 1885, 17 (Colorado, breeding at 4,500–11,500 ft.).—COUES, Check List, 2d ed., 1882, no. 441, part.—ALLEN and BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 196 (Colorado Springs).—BECKHAM, Auk, ii, 1885, 143 (Pueblo, Colorado, May).—(?)MERRILL, Auk, v, 1888, 252 (Ft. Klamath, Oregon).

*Picus pubescens* . . . var. *gairdnerii* COUES, Check List, 1873, no. 299a, part.

*Picus pubescens* . . . var. *gairdneri* RIDGWAY, Bull. Essex Inst., v, Nov., 1873, 173 (Colorado).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 48 (Provo, Utah, Nov.), 89 (Ft. Garland, Colorado, breeding); Zool. Exp. W. 100th Merid., 1875, 388 (Ft. Garland).

*[Picus pubescens]* b. *gairdneri* COUES, Birds Northwest, 1874, 282, part.

*Picus pubescens*, var. *gairdneri* RIDGWAY, Bull. Essex Inst., v, Nov., 1873, 173 (Wahsatch Mts., Utah, 8,000 ft.).—BAIRD, BREWSTER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 512, part.—ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 63 (Missouri and Musselshell rivers, Montana).—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 9 (Wahsatch Mts. and Provo, Utah).—SCOTT, Bull. Nutt. Orn. Club, iv, 1879, 95 (Lake Co., Colorado, June).



- Dryobates pubescens gairdnerii* AMERICAN ORNITHOLOGISTS' UNION, Check List 1886, no. 394a, part.—(?)SCOTT, Auk, iii, 1886, 426 (Gila R., Arizona, April).—(?)COOKE, Bird Migr. Miss. Val., 1888, 128 (centr. Dakota).—(?)BENDIRE, Auk, v, 1888, 240 (Ft. Klamath, Oregon, breeding).
- D[ryobates] pubescens gairdnerii* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.
- D[ryobates] p[ubescens] gairdneri* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.
- [Dendrocopus pubescens.]* Subsp. *α. Dendrocopus gairdneri* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 241, part (Santa Fe Mts., New Mexico).
- D[ryobates] homorus* CABANIS and HEINE, Mus. Hein., iv, heft 2, June, 1863, 65 (California).
- [Dryobates] homorus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 214 (California).
- Dryobates pubescens homorus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 597, part.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 126 (check list no. 394b); Check List, 3d ed., 1910, 187.—DAWSON, Auk, xiv, 1897, 174 (Okanogan Co., Washington).—MERRILL (J. C.), Auk, xiv, 1897, 354 (Ft. Sherman, Idaho, resident).—COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 83 (Colorado, resident up to 11,000 ft.).—BROOKS, Auk, xx, 1903, 282 (Caribou District, Brit. Columbia).—GILMAN, Condor, x, 1908, 147 (Navajo Reservation, New Mexico, breeding).—ROCKWELL, Condor, x, 1908, 164 (Mesa Co., w. Colorado, resident).—WARREN (E. R.), Condor, xi, 1909, 14 (Montrose Co., Colorado).—HENDERSON, Univ. Colo. Stud. Zool. vi, 1909, 231 (mts. of Colorado, resident).—KERMODE, Prov. Mus. Brit. Col., 1909, 49 (Ducks, Vernon, Chilliwack, and Okanogan, int. Brit. Columbia).
- P[icus] homorus SUNDEVALL*, Consp. Av. Picin., 1866, 18 (crit.).
- [Picus] homorus GRAY*, Hand-list, ii, 1870, 185, no. 8596.
- Dryobates pubescens oreæcus* BATCHELDER, Auk, vi, no. 3, July, 1889, 253 (Las Vegas Hot Springs, New Mexico, Dec. 18; coll. C. F. Batchelder).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 138 (Ducks and Ashcroft, int. Brit. Columbia; crit.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, vii, 1890, 62; Check List, 2d ed., 1895, no. 394b.—MEARNS, Auk, vii, 1890, 252 (San Francisco Mt., Arizona, breeding in pine and spruce belts).—FANNIN, Check List Birds Brit. Col., 1891, 28 (int. Brit. Columbia).—RHODS, Proc. Ac. Nat. Sci. Phila., 1893, 42 (int. Brit. Columbia; crit.).—RICHMOND and KNOWLTON, Auk, xi, 1894, 303 (s.-cent. Montana).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 60.—SILLOWAY, Bull. Univ. Mont., no. 3, 1901, 50 (Flathead Lake, etc., Montana).—CAMERON, Auk, xxiv, 1907, 270 (Custer and Davenport counties, Montana, resident).
- Dryobates pubescens oroæcus* LOWE, Auk, xi, 1894, 268 (Wet Mts., Colorado, 10,000 ft.).
- [Dendrocopus] oreæcus* SHARPE, Hand-list, ii, 1900, 214.
- Picus pubescens* (not of Linnæus) WOODHOUSE, in Rep. Sitgreaves' Expl. Zuffi and Col. R., 1853, 89, part (New Mexico).
- (?) *Picus pubescens* GRINNELL (G. B.), in Ludlow's Rep. Recon., 1876, 81 (Yellowstone Park).
- (?) *Dryobates pubescens* MERRIAM, North Am. Fauna, no. 5, 1891, 97 (Wood R. Valley, Idaho).—FANNIN, Check List Birds Brit. Col., 1891, 27 (Cascade Mts. and eastward, Brit. Columbia, resident).

**DRYOBATES PUBESCENS GLACIALIS** Grinnell.**VALDEZ DOWNY WOODPECKER.**

Intermediate in size between *D. p. nelsoni* and *D. p. medianus*, but differing from both in absence of white sub-basal spots on greater wing-coverts, reduction of size, or number, of white spots on middle coverts, and more spot-like or rounded form of white markings on inner secondaries; under parts less purely white (more grayish)?

*Adult male*.—Length (skins), 152–162 (157); wing, 94–99 (96); tail, 57–60 (58.7); exposed culmen, 16–17 (16.3); tarsus, 16.5–17 (16.8); outer anterior toe, 10–11 (10.5).<sup>a</sup>

*Adult female*.—Length (skins), 155–162 (158); wing, 96–99 (97.2); tail, 59–63.5 (61.2); exposed culmen, 16–17 (16.5); tarsus, 16–17 (16.5); outer anterior toe, 10.5–11 (10.7).<sup>a</sup>

Kenai Peninsula (Homer; Moose Camp), shores and islands of Prince William Sound (Valdez Narrows; Naked Island) and eastward along coast of Alaska to Taku River; northern British Columbia (Fort Babine)?<sup>b</sup>

*Picus pubescens* (not of Linnæus) FINSCH, Abh. Nat. Brem., iii, 1872, 60 (Alexandrovsk, Alaska).—COUES, Check List, 1873, no. 299, part; 2d ed., 1882, no. 440, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 509, part.—RIDGWAY, Nom. N. Am. Birds, 1881, no. 361, part.—HARTLAUB, Journ. für Orn., 1883, 275 (Chilcat R., Alaska).

[*Picus*] *pubescens* COUES, Key N. Am. Birds, 1872, 194, part.

[*Picus*] *pubescens* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.

*Dryobates pubescens* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 394, part.—(?)NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 156, part (Sitka?).

[*ryobates*] *pubescens* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.

*Dryobates pubescens nelsoni* (not of Oberholser) CHAPMAN, Bull. Am. Mus. N. H., xvi, 1902, 239 (Homer, Kenai Peninsula, Alaska, Sept.); xx, 1904, 402 (Moose Camp, Kenai Peninsula, Sept.; crit.).

*Dryobates pubescens glacialis* GRINNELL (J.), Univ. Calif. Pub. Zool., v, no. 12, March 5, 1910, 390 (Valdez Narrows, Prince William Sound, Alaska, Sept.; coll. Mus. Vert. Zool. Univ. Calif.).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 68 (Taku R., Alaska; crit.; habits).

**DRYOBATES PUBESCENS TURATI** (Malherbe).**WILLOW WOODPECKER.**

Similar in pattern of coloration to *D. p. homorus*, but decidedly smaller and with white of under parts much duller.

*Adult male*.—Length (skins), 145–163 (154); wing, 88.5–97 (92.6); tail, 53.5–60.5 (55); exposed culmen, 15–17 (16.3); tarsus, 15–17 (16.1); outer anterior toe, 9–11.5 (10.5).<sup>c</sup>

<sup>a</sup> Three specimens.

<sup>b</sup> A breeding bird from Fort Babine, in the interior of northern British Columbia, is very near this form in its characters, but has indications of white subbasal spots on the greater wing-coverts. Its measurements are essentially the same (wing, 94; exposed culmen, 16; tarsus, 16.5; outer anterior toe, 10).

<sup>c</sup> Ten specimens.

*Adult female*.—Length (skins), 141–163 (152); wing, 88–95 (92.2); tail, 51–60.5 (55.8); exposed culmen, 14.5–17 (15.5); tarsus, 16–17 (16.2); outer anterior toe, 10–11 (10.5).<sup>a</sup>

Upper Austral and Transition zones of California, except on northwest coast and southeastern desert mountains.

*Picus meridionalis* (not of Swainson) NUTTALL, Man. Orn. U. S. and Can., 2d ed., i, 1840, 690 (California).—GAMBEL, Journ. Ac. Nat. Sci. Phila., i, 1847, 55 (California).—(?)HEERMANN, Rep. Pacific R. R. Surv., x, pt. vi, no. 2, 1859, 57 (mts. of n. California).

*Picus gairdneri* (not of Audubon) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 91, part (Petaluma, Sacramento, and San Francisco, California).—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon, California).—COOPER, Orn. Calif., 1870, 377 (chiefly).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, iii, 1874, 521 (Santa Cruz I., California, breeding; measurements of eggs).

*Picus* (*Trichopicus*) *gairdneri* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvii, part.

[*Picus pubescens*.] Var. *gairdneri* COUES, Key N. Am. Birds, 1872, 194, part.

*Picus pubescens*, var. *gairdneri* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 512, part.

*Picus pubescens gairdneri* (not of Ridgway, 1875) RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 361a, part.—COUES, Check List, 2d ed., 1882, no. 441, part.

*P*[*icus*] *p*[*ubescens*] *gairdneri* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.

*Dryobates pubescens gairdnerii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 394a, part.—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 205 (Baird, Shasta Co., California, breeding).—EMERSON, Bull. Calif. Ac. Sci., ii, 1887, 426 (Poway Valley, San Diego Co., California, breeding).—FISHER, North Am. Fauna, no. 7, 1893, 47 (Tehachapi Pass, Grapevine Mts., and Panamint Mts., California, breeding).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 58, part.—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 25 (Los Angeles Co., California).—VAN DENBURG, Proc. Ac. Nat. Sci. Phila., xxxviii, 1899, 162 (Santa Clara Co., California, breeding).

*D*[*ryobates*] *p*[*ubescens*] *gairdnerii* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.

*Dryobates pubescens gairdneri* EMERSON, Auk, iii, 1886, 94 (Ventura Co., California, resident).—MAILLIARD, Condor, iii, 1901, 122 (San Benito Co., California, resident).

*Picus pubescens*,  $\beta$ . *gairdneri* RIDGWAY and BELDING, Proc. U. S. Nat. Mus., i, March 2, 1879, 428 (Marysville, Murphys, and Big Trees, California).

[*Picus pubescens*]  $\beta$ . *gairdneri* COUES, Birds Northwest, 1874, 282, part.

[*Dendrocopus pubescens*.] Subsp.  $\alpha$ . *Dendrocopus gairdneri* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 241, part (Monterey, Los Alamos, San Bernardino, Visalia, and Walker Basin, California).

*Picus gairdneri* SCLATER, Proc. Zool. Soc. Lond., 1857, 127 (San José Valley, California).

*Picus turati* MALHERBE, Mon. Picid., i, 1861, 125, iii, 1861, pl. 29, figs. 5, 6, 7 (near Monterey, California; coll. Malherbe).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 202 (crit.).

[*Picus*] *turati* GRAY, Hand-list, ii, 1870, 185, no. 8597.

*P*[*icus*] *turati* SUNDEVALL, Conspect. Av. Picin., 1866, 18 (crit.).

*D*[*ryobates*] *turatii* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 65 (Monterey, California).

<sup>a</sup> Ten specimens.



- Dryobates pubescens turati* FISHER (W. K.), Condor, iv, May, 1902, 68 (diagnosis; crit.).—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 37 (California range).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 341 (check list no. 394e); Check List, 3rd ed., 1910, 187.—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, n. California; crit.).—WIDMANN, Auk, xxi, 1904, 68 (Yosemite Valley).—SHARP, Condor, ix, 1907, 87 (San Diego Co., California, breeding).—GOLDMAN, Condor, x, 1908, 203 (Summit Lake and Tulare Co., California, June).
- (?) *Picus pubescens* (not of Linnæus) RIDGWAY, Bull. Nutt. Orn. Club, iii, 1878, 67 (Marysville, Yuba Co., California, Dec. 27; crit.).—RIDGWAY and BELDING, Proc. U. S. Nat. Mus., i, 1879, 428 (Marysville).<sup>a</sup>

### DRYOBATES PUBESCENS GAIRDNERII (Audubon).

#### GAIRDNER'S WOODPECKER.

Similar to *D. p. turati*, but color of under parts darker (often light brownish gray or drab), the white of back often tinged with brownish gray.

*Adult male*.—Length (skins), 150–160 (156); wing, 92–97 (95.1); tail, 53–64 (58.1); exposed culmen, 15–19 (16.4); tarsus, 16–18 (16.6); outer anterior toe, 10.5–12 (11.1).<sup>b</sup>

*Adult female*.—Length (skins), 151–167 (157); wing, 91.5–100 (92.8); tail, 53–60 (57.5); exposed culmen, 14.5–17 (15.5); tarsus, 15.5–17 (16.4); outer anterior toe, 10–11.5 (10.9).<sup>b</sup>

Humid Transition Zone of northwest coast district, from southern British Columbia (Victoria; Saturna Island; Port Moody; Agassiz; Vernon; New Westminster; Mount Lehman; Kalama) southward through western Washington and Oregon to Mendocino and Siskiyou Counties (occasionally to Marin County, at least in winter), California.

*Picus gairdnerii* AUDUBON, Orn. Biog., v, 1839, 317 (no locality given, but type from near Ft. Vancouver, Washington; type lost?); Birds Am., oct. ed., iv, 1842, 252.—NEWBERRY, Rep. Pacific R. R. Surv., x, pt. iv, 1859, 89 (n. California; Oregon).—LORD, Proc. Roy. Art. Inst. Woolwich, iv, 1860, 111 (Brit. Columbia).

*Picus gairdneri* AUDUBON, Synopsis, 1839, 180.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 91, part (Shoalwater Bay and Ft. Steilacoom, Washington; St. Helens and Ft. Dalles, Oregon); ed. 1860 (Birds N. Am.), atlas, pl. 85, figs. 2, 3; Cat. N. Am. Birds, 1859, no. 77, part.—SCLATER, Proc. Zool. Soc. Lond., 1859, 236 (Vancouver I.).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 159 (w. Oregon and Washington).—MALHERBE, Mon. Picid., i, 1861, 123.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 201 (crit.).—SUNDEVAL, Consp. Av. Picin., 1866, 17.—GRAY, List Birds Brit. Mus., Picidæ, 1868, 44, part (Vancouver I.).—BROWN, Ibis, 1868, 419 (Vancouver I.).—COOPER, Orn. Calif., 1870, 377, part.

<sup>a</sup> The specimen noted agrees with typical *D. p. turati* in small size and decidedly smoky whitish coloration of the under parts, but has the middle wing-coverts heavily and numerously spotted with white, and the greater coverts with a sub-basal row of white spots, as in the eastern forms. It is a very puzzling specimen, but I am now inclined to regard it as merely an aberrant specimen of *D. p. turati*.

<sup>b</sup> Ten specimens.

- P[icus] gairdnerii* REICHENBACH, Handb. Scansores, Picinæ, 1854, 375.
- [*Picus*] *gairdneri* GRAY, Hand-list, ii, 1870, 184, no. 8591.
- Dryobates pubescens gairdnerii* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355; Man. N. Am. Birds, 2d ed., 1896, 596.—AMERICAN ORNITHOLOGISTS' UNION, Check List (and 2d ed., 1895), 1886, no. 394a, part.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 58, part.
- D[ryobates] pubescens gairdnerii* RIDGWAY, Man. N. Am. Birds, 1887, 283, part.
- [*Trichopicus*] *gairdneri* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).
- Picus (Trichopicus) gairdneri* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxvii, part.
- D[ryobates] gairdneri* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 64 (Oregon; Washington).
- [*Picus pubescens*.] Var. *gairdneri* COUES, Key N. Am. Birds, 1872, 194, part.
- Picus pubescens*, var. *gairdneri* RIDGWAY, Am. Journ. Sci., iv, Dec., 1872, 456.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 512, part.
- Picus pubescens gairdneri* (not of Ridgway, 1875) RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 361a, part.—COUES, Check List, 2d ed., 1882, no. 441, part.
- P[icus] p[ubescens] gairdneri* COUES, Key N. Am. Birds, 2d ed., 1884, 483, part.
- Dryobates pubescens gairdneri* ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 138 (Westminster, Mt. Lehman, Kalama, and Vancouver I., Brit. Columbia; crit.).—MERRIAM, North Am. Fauna, no. 16, 1899, 114 (Sisson, n. California).—FISHER (W. K.), Condor, iv, 1902, 69 (diagnosis).—ANDERSON and GRINNELL, Proc. Ac. Nat. Sci. Phila., 1903, 7 (Siskiyou Mts., n. California; crit.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 187.—SWARTH, Univ. Calif. Pub. Zool., x, 1912, 34 (crit.).
- [*Picus pubescens*] b. *gairdneri* COUES, Birds Northwest, 1874, 282, part.
- [*Dendrocopus pubescens*.] Subsp.  $\alpha$ . *Dendrocopus gairdneri* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 241, part (Brit. Columbia; Vancouver I.; Walla Walla, Columbia R., Albany, Umatilla Agency, and Dalles, Oregon).
- [*Dendrocopus*] *gairdneri* SHARPE, Hand-list, ii, 1900, 214.
- P[icus] gairdneri* GRAY, Gen. Birds, ii, 1845, 435.
- Dryobates pubescens fumidus* MAYNARD, Ornith. and Ool., xiv, no. 4, April, 1889, 58 (s. Vancouver I., Brit. Columbia; coll. F. B. Webster).
- (?) *Picus meridionalis* (not of Swainson) HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 57 (mts. of n. California).

### DRYOBATES NUTTALLII (Gambel).

#### NUTTALL'S WOODPECKER.

*Adult male in autumn and winter*.—Forehead and greater part of crown black, more or less conspicuously streaked (except sometimes on forehead) with white, the streaks of narrowly guttate or cuneate form; extreme posterior portion of crown, occiput, nape, and upper hindneck bright red (poppy red to scarlet vermilion), this color separated, on each feather, from a dusky basal area by a small V-shaped or sagittate spot of whitish; lower hindneck, upper back, lesser wing-coverts, upper tail-coverts, and four middle rectrices uniform black; rest of back, together with scapulars and rump, broadly barred with black and white, the bars of the two colors approximately

equal in width; middle and greater wing-coverts black, the former with a single subterminal roundish or subcordate spot of white, the latter with two roundish white spots on outer web; remiges black, broadly barred with white, their inner webs with larger roundish or subquadrate spots of the same; outermost normal (i. e., second) rectrix white, with one complete subterminal bar of black and a second incomplete or interrupted bar, the basal portion of inner web usually with more or less of black; next rectrix similar but with more black at base and with second subterminal interrupted bar reduced to a pair of small, widely separated spots, or even obsolete; third (i. e. fourth) rectrix with more than basal half black and without second (sometimes without any) subterminal black spot or bar; nasal tufts and anterior portion of loreal or latero-frontal region dull whitish or light yellowish, the former dusky terminally; posterior portion of loreal region, narrow rictal stripe (extending posteriorly beneath orbital and auricular regions), a broader supra-auricular stripe (extending anteriorly to at least middle of orbital region and posteriorly continued, more broadly, along sides of neck), together with under parts, white, the under parts of body usually tinged, more or less strongly, with pale brownish buffy; auricular region and broad malar stripe (the latter continued posteriorly over lower sides of neck, where much expanded), black; sides and flanks spotted with black, the markings more longitudinal on sides of breast, more transverse on flanks; under tail-coverts barred or transversely spotted with black; bill horn color (more or less dark) usually darker toward culmen; iris brown; legs and feet grayish olive or greenish gray in dried skins.

*Adult male in spring and summer.*—Similar to the autumnal and winter plumage, but white streaks on forehead and crown much reduced in size, sometimes obsolete, and red nuchal area more restricted, through wearing off of red tips of feathers of anterior portion.

*Adult female in autumn and winter.*—Similar to the adult male of corresponding season, but without any red on occiput or nape, which are black, with guttate or elliptical streaks of white, like forehead and crown.

*Adult female in spring and summer.*—Similar to the fall and winter plumage, but pileum and hindneck uniform black or else (in earlier spring), with very small or scattered white streaks.

*Young male.*—Essentially like adult males, but occiput, nape, and hindneck uniform black, the whole crown red, spotted or speckled with white, "pattern" of upper parts less sharply defined, and markings on lateral under parts less distinct.

*Young female.*—Similar to the young male, but red of crown more restricted, and forehead streaked with white.



*Adult male*.—Length (skins), 165–180 (173); wing, 100.5–107.5 (102.7); tail, 61–67 (63.8); culmen, 19.5–22 (20.8); tarsus, 17.5–19 (18.4); outer anterior toe, 12–13.5 (12.8).<sup>a</sup>

*Adult female*.—Length (skins), 161–182 (169); wing, 98–104.5 (101.9); tail, 59–67 (63.8); culmen, 18–21 (19.3); tarsus, 17.5–18.5 (17.9); outer anterior toe, 12–13 (12.4).<sup>a</sup>

Upper Sonoran Zone in California (west of Sierra Nevada), southwestern Oregon (Ashland), and northern Lower California (70 miles east of Ensenada?; Rancho Viejo, 15 miles east of Álamo; San Rafaél?; San Pedro Martir Mountains).

*Picus nuttallii* GAMBEL, Proc. Ac. Nat. Sci. Phila., i, April, 1843, 259 (Los Angeles Co., California; coll. Ac. Nat. Sci. Phila.?).—BAIRD, in Rep. Stansbury's Surv. Gt. Salt Lake, 1852, 333 (California).—WOODHOUSE, in Rep. Sitgreaves's Expl. Zuñi and Col. R., 1853, 90 (California).—NEWBERRY, Rep. Pacific R. R. Surv., x, pt. iv, 1859, 89.—CASSIN, Proc. Acad. Nat. Sci. Phila., 1863, 195 (crit.).—SUNDEVALL, Conspectus Av. Picin., 1866, 19.

*Picus nuttallii* SCLATER, Proc. Zool. Soc. Lond., 1857, 127 (San José Valley, California); 1858, 3 (near Shasta, Calif.).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 93; ed. 1860 (Birds N. Am.), atlas, pl. 41, fig. 2; Cat. N. Am. Birds, 1859, no. 78.—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon, California).—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 57 (valleys of California).—MALHERBE, Mon. Pictid., i, 1861, 100; iii, 1861, pl. 24, figs. 8, 9.—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 49.—COOPER, Orn. Calif., 1870, 378.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 521, pl. 50, figs. 3, 6.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1876, 258 (Santa Barbara, Ft. Tejon, Tejon Mts., and Kernville, California; habits).—RIDGWAY, Orn. 40th Parallel, 1877, 547 (Sacramento Valley); Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 364.—BELDING, Proc. U. S. Nat. Mus., i, 1879, 428 (Murphys, Marysville, and Stockton, California).

*Picus (Dyctiopicus) nuttallii* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxviii.

*D[ictyopipo] nuttallii* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 75.

*[Dictyopipo] nuttallii* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (Folsom and Auburn, California).

*[Picus scalaris.]* Var. *nuttallii* COUES, Key N. Am. Birds, 1872, 193.

*Picus scalaris* . . . var. *nuttallii* COUES, Check List, 1873, no. 297a.

*Picus scalaris nuttallii* COUES, Check List, 2d ed., 1882, no. 435.

*P[icus] s[calaris] nuttallii* COUES, Key N. Am. Birds, 2d ed., 1884, 482.

*Dryobates nuttallii* RIDGWAY, Proc. U. S. Nat. Mus., viii, Sept. 2, 1885, 355.—EVERMANN, Auk, iii, 1886, 94 (Ventura Co., California).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 205 (Red Bluff, n. California).—ANTHONY, Zoë, iv, 1893, 236 (San Pedro Martir Mts., Lower California, up to 4,000 ft.).—GRINNELL (J.), Univ. Calif. Pub. Zool., v, 1908, 62 (Seven Oaks, etc., San Diego Co.; San Bernardino Mts., breeding).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 188.—BEAL, Bull. 34, U. S. Biol. Surv., 1910, 19 (food); Bull. 37, 1911, 24 (food).

*Dryobates nuttallii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, (and 2d ed., 1895), no. 397.—MORCOM, Bull. Ridgw. Orn. Club, no. 2, 1887, 41 (San Bernardino, California).—GAULT, Bull. Ridgw. Orn. Club, no. 2, 1887, 78–81 (range, habits, etc.).—(?)BRYANT (W. E.), Proc. Calif. Ac. Sci., ser.

<sup>a</sup> Ten specimens.

- 2, 1889, 286 (San Rafael and Ensenada, Lower California, up to 3,500 ft.).<sup>a</sup>—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 47 (Cajon Pass, San Bernardino Mts., Old Ft. Tejon, Walker Basin, etc.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 65.—MAILLIARD, Auk, xv, 1898, 196 (San Gerónimo, Marin Co., California and 30 m. northward).—VAN DENBURG, Proc. Ac. Nat. Sci. Phila., xxxviii, 1899, 162 (Mt. Hamilton, Santa Clara Co., breeding).  
*D[ryobates] nuttallii* RIDGWAY, Man. N. Am. Birds, 1887, 285.  
*Dendrocopus nuttalli* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 244 (Ashland, Oregon; localities in California).  
*[Dendrocopus] nuttalli* SHARPE, Hand-list, ii, 1900, 215.  
*Picus scalaris* (not of Wagler) GAMBEL, Journ. Ac. Nat. Sci. Phila., i, 1847, 55, pl. 9, figs. 2, 3 (California).  
*Picus wilsonii* MALHERBE, Rev. et Mag. de Zool., Nov., 1849, 529 (Monterey, California; coll. A. Malherbe?;=adult male).  
*P[icus] wilsoni* BONAPARTE, Consp. Av., i, 1850, 138.  
*P[icus] wilsonii* REICHENBACH, Handb. Scansores, Picinæ, 1854, 375.  
*[Trichopicus] wilsoni* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).

### DRYOBATES SCALARIS SCALARIS (Wagler).

#### ORIZABA WOODPECKER.

*Adult male*.—Pileum, superficially, bright red (poppy red or vermilion), the feathers dark grayish sooty basally, and with a white spot in middle portion, the red tips gradually increasing in length toward the nape, so that the white spots are concealed posteriorly, but exposed on the crown, where also the basal dusky shows, more or less; forehead with very little, if any, red, passing into brownish (more or less dark) anteriorly; hindneck, back, scapulars, and rump broadly, sharply, and regularly barred with black and white, the black bars narrower than the white, and less distinct on rump; shorter upper tail-coverts black, usually with a white subapical spot or bar; longer upper tail-coverts and four middle rectrices uniform black; lateral (developed) pair of rectrices dull or brownish white, crossed by about six broad bars of black, those on basal portion of outer web usually reduced to spots next to shaft; next (third) pair similar, but with about basal half of inner web uniform black; fourth pair black, with broad white spots, or broadly and irregularly edged with white, on about terminal half of outer web, the inner web sometimes with one to three white spots on terminal portion; wings black, the middle coverts with a central or subapical, usually cordate, spot of white, the lesser coverts (at least the posterior ones) with a smaller and more rounded white central spot, the greater coverts crossed by two transverse series, or bands, of white spots, the secondaries with six similar white bands, the first (subbasal one) concealed by greater coverts, the primaries similarly marked; nasal tufts dull brownish white to pale brown; a broad supraauricular stripe of brownish white or pale dull brownish buffy; a broad subauricular stripe of the same color, extend-

<sup>a</sup> According to Anthony (Zoë, iv, 1893, 236) this may be *D. scalaris eremicus*.

ing anteriorly, beneath eye, to base of nasal tufts, the two sometimes confluent on side of neck, behind the black auricular stripe; malar region dull whitish or pale brownish buffy anteriorly, more or less distinctly barred with dusky (plain light brownish or dull grayish anteriorly), black posteriorly, where the black is continued backward as a narrow stripe, which usually sends a lateral branch upward to meet the posterior end of the black auricular stripe; under parts dull brownish buffy or pale isabella color,<sup>a</sup> paler (approaching dull grayish white) on chin and upper throat, flanks, and under tail-coverts, the sides of chest and breast marked with streaks or, usually, more or less guttate, spots of black, the sides spotted, the flanks transversely spotted or barred, the under tail-coverts with transverse bars or spots of the same, usually of more or less V-shaped form; under wing-coverts dull brownish white, sparsely (sometimes indistinctly) spotted or streaked with black or dusky; inner web of remiges dull slate or dusky, with large, roundish spots of white, arranged in transverse series, on inner half of web; bill horn color, more or less darker on maxilla, paler on mandible; iris brown; legs and feet dusky horn color (olive-greenish in life); length (skins), 160–168 (162); wing, 95–101 (97.3); tail, 52.5–57 (54.9); exposed culmen, 19.5–21 (20.2); tarsus, 18–18.5 (18.1); outer anterior toe, 11.5–13 (11.8).<sup>b</sup>

*Adult female*.—Similar to the adult male, but without any red, the pileum uniform black, passing into sooty brown on anterior portion of forehead; length (skins), 145–168 (152); wing, 93–98 (95.1); tail, 49–52.5 (50.1); exposed culmen, 17.5–19.5 (18.5); tarsus, 16–16.5 (16.3); outer anterior toe, 10.5–12 (11.6).<sup>b</sup>

*Young male*.—Similar to the adult male, but with nape and sides of occiput uniform black, the red confined to the crown, black markings duller, all the markings less sharply defined, and plumage of softer texture.

*Young female*.—Similar to the young male, but usually with much less of red on crown (often only a few of the feathers tipped with red).

Middle and northern Vera Cruz (Orizaba; Miradór; Carrizál; Córdova; Huatusco, near Córdova; Jalapa; Coátepec; Jico; Plan del

<sup>a</sup> The color deeper in fresh, or winter, plumage, paler in summer.

<sup>b</sup> Five specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Three adult males from Vera Cruz.....	96.3	53.5	20.2	18	11.8
Two adult males from southern Tamaulipas.....	98.7	57	20.2	18.2	13

The birds from southern Tamaulipas are intermediate between typical *D. s. scalaris* and *D. s. symplectus*, but are nearer the former, both in measurements and coloration.



Rio), southern Tamaulipas (Aldama; Tampico; Alta Mira), and southern San Luís Potosí (Vallés).

*[Picus] scalaris* WAGLER, Isis, 1829, 511 (Mexico <sup>a</sup>).—GRAY, Gen. Birds, ii, 1845, 435.—BONAPARTE, Consp. Av., i, 1850, 138.—REICHENBACH, Handb. Scau-sores, Picinæ, 1854, 377, pl. 639, figs. 4264-4266.

*[Picus] scalaris* LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 75.—GRAY, Hand-list<sup>4</sup> ii, 1870, 185, no. 8605.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

*Picus scalaris* SCLATER, Proc. Zool. Soc. Lond., 1856, 307, part (Mexico; crit.); Cat. Am. Birds, 1862, 333, part (Orizaba, Vera Cruz).—MALHERBE, Mon. Pici-d., i, 1861, 116; iii, 1861, pl. 27, figs. 1-6.—SUNDEVALL, Consp. Av. Picin., 1866, 18 (Jalapa, Vera Cruz).—GRAY, List Birds Brit. Mus., Capit. and Pici-d., 1868, 48 (Mexico).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 515, part.

*D[ryobates] scalaris* RIDGWAY, Man. N. Am. Birds, 1887, 284, part (Vera Cruz).

*Dryobates scalaris scalaris* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 188.—OBERHOLSER, Proc. U. S. Nat. Mus., xli, 1911, 140, 141 (monogr.).

*[Picus scalaris]* var. *scalaris* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 501, 517, part.

*[Dyctiopicus] scalaris* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).

*Picus (Dyctiopicus) scalaris* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxviii, part.

*D[ictyopipo] scalaris* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 74 (Jalapa).

*[Dictyopipo] scalaris* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (Jalapa).

*Dendrocopus scalaris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 246, part (Aldama and Tampico, Tamaulipas; Jalapa, Cordova, Orizaba, and San Andres, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part (Tampico and Aldama, s. Tamaulipas; Jalapa, Coatepec, Cordova, Huatusco near Cordova, Orizaba, and Plan del Rio, Vera Cruz).<sup>b</sup>

*[Dendrocopus] scalaris* SHARPE, Hand-list, ii, 1900, 215, part.

*Picus gracilis* LESSON, Rev. Zool., 1840, 41 (Mexico).

*Picus orizabæ* CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 196 (Orizaba, Vera Cruz; coll. Acad. Nat. Sci. Phila.).

#### DRYOBATES SCALARIS RIDGWAYI Oberholser.

##### TLALCOTALPÁM WOODPECKER.

Similar to *D. s. scalaris*, but decidedly smaller; similar in size to *D. s. parvus*, but lateral under parts streaked instead of spotted (or, if spotted, the spots narrow and much smaller), malar region paler (with less blackish intermixture) anteriorly, and black bars on back, etc., relatively narrower.

*Adult male*.—Length (skins), 140-154 (147); wing, 88-92.5 (90.7); tail, 45-50.5 (47.7); exposed culmen, 18.5-20.5 (19.1); tarsus, 16-17.5 (16.6); outer anterior toe, 11.5-12 (11.7).<sup>c</sup>

<sup>a</sup> The precise locality not stated, but the description indicates the form from central and northern Vera Cruz.

<sup>b</sup> The localities Sola and Juchatengo (Oaxaca) and Amula (Guerrero), mentioned in the "Biologia," I am unable to properly allocate, not a single specimen from either of the States of Oaxaca or Guerrero being contained in the series of more than 550 examples of this species examined in this connection.

<sup>c</sup> Four specimens.

*Adult female*.—Length (skin), 140; <sup>a</sup> wing, 86–89.5 (88); tail, 47.5; <sup>a</sup> exposed culmen, 17–19.5 (18); tarsus, 16; outer anterior toe, 11–11.5 (11.3).<sup>b</sup>

Coast district of southern Vera Cruz (Jaltipán; Tlalcotalpám; Pasa Nueva).

*Dryobates scalaris ridgwayi* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 140, 143 (Jaltipán, s. Vera Cruz, Mexico; coll. U. S. Nat. Mus.).

### DRYOBATES SCALARIS PERCUS Oberholser.

#### COMITÁN WOODPECKER.

Similar to *D. s. scalaris* in size, but black bars on back, etc., broader, and lateral under parts with larger and more numerous black spots, the spots extending entirely across chest; red of occiput, etc., in adult male slightly deeper (less orange-red or scarlet).

*Adult male*.—Length (skins), 136–141 (139); wing, 94–99 (96.5); tail (imperfect); exposed culmen, 17.5–20 (18.8); tarsus, 17; outer anterior toe, 11.5–12.5 (12).<sup>c</sup>

*Adult female*.—Length (skins), 132–142 (137); wing, 90–94.5 (92.3); tail (imperfect); exposed culmen, 16.5–18 (17.3); tarsus, 16–17 (16.5); outer anterior toe, 11.5–12 (11.7).<sup>c</sup>

State of Chiapas, southern Mexico (San Vicente; Comitán; Tuxtla Gutierrez).

*Dryobates scalaris percus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 140, 144 (Comitán, Chiapas, s. Mexico; coll. U. S. Nat. Mus.).

### DRYOBATES SCALARIS PARVUS (Cabot).

#### SISÁL WOODPECKER.

Similar to *D. s. ridgwayi* in small size (wing averaging slightly shorter), but differing in having the lateral under parts much more heavily marked with black, the markings mostly in the form of rounded or cordate spots (instead of streaks), in broader black and narrower white bars on back, etc., anterior portion of malar region more blackish, and red of occiput, etc., in adult male slightly deeper (less orange).

*Adult male*.—Length (skins), 141–155 (149); wing, 87–92 (89.1); tail, 46–53.5 (48.4); exposed culmen, 18–20.5 (19.4); tarsus, 15.5–17 (16.3); outer anterior toe, 11–12.5 (11.5).<sup>d</sup>

*Adult female*.—Length (skins), 139–150 (144); wing, 86–89.5 (87); tail, 46–49 (47.3); exposed culmen, 16–18 (16.9); tarsus, 15.5–16.5 (15.9); outer anterior toe, 11–12 (11.5).<sup>e</sup>

<sup>a</sup> One specimen.

<sup>b</sup> Three specimens.

<sup>c</sup> Two specimens.

<sup>d</sup> Ten specimens.

<sup>e</sup> Six specimens.

Yucatan (Sisál; Mérida; Temáx; Chichen-Itza; La Vega; west of Tunkas; Progreso; San Felipe; Tekanto; Ticúl; Tizimín; Chable; Pocúl; Cozumél Island).

*Picus parvus* CABOT, Journ. Ac. Nat. Sci. Phila., v, 1845, 90 (Ticúl, Yucatan; coll. S. Cabot, jr.).

*P[icus] parvus* GRAY, Gen. Birds, iii, 1849, App., p. 21.

*D[ryobates] scalaris parvus* RIDGWAY, Man. N. Am. Birds, 1887, 284.

*Dryobates scalaris parvus* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Tunkas and Tekanto, Yucatan).—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 285 (Chichen-Itza, Yucatan).—OBERHOLSER, Proc. U. S. Nat. Mus., xli, 1911, 140, 145 (monogr.).

*Picus scalaris* (not of Wagler) SCLATER and SALVIN, Ibis, 1859, 136 (Ticul, Yucatan).—LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 205 (Mérida, Yucatan).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 515, part (Yucatan).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 452 (Yucatan).—SALVIN, Ibis, 1885, 191 (Cozumel I.; habits); 1889, 368 (Cozumel I.; crit.).

[*Picus*] *scalaris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

*Dendrocopus scalaris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 246, part (Mérida, Tizimin, Chable, and Cozumel Island, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., ii, 1895, 435, part (Pocul, etc., Yucatan).

[*Dendrocopus*] *scalaris* SHARPE, Hand-list, ii, 1900, 215, part (Yucatan).

*Picus vagatus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 196 (Mexico?; coll. Acad. Nat. Sci. Phila.); Journ. Ac. Nat. Sci. Phila., 1863, pl. 52, fig. 1.—SUNDEVALL, Consp. Av. Picin., 1866, 19.—GRAY, List Birds Brit. Mus., Capit. and Picid., 1868, 49.

[*Picus*] *vagatus* GRAY, Hand-list, ii, 1870, 186, no. 8610.

#### DRYOBATES SCALARIS LEUCOPTILURUS Oberholser.

##### PECK'S WOODPECKER.

Similar to *D. s. parvus*, but still smaller; lateral rectrices less regularly and less extensively barred (the inner web more extensively black basally, the outer with proximal portion more narrowly or not at all barred); back, etc., rather less broadly barred, and red of head in adult male slightly deeper (less scarlet).

*Adult male*.—Length (skins), 137–149 (143); wing, 85–88.5 (86.8); tail, 43–48.5 (45.8); exposed culmen, 18–19 (18.5); tarsus, 16.5; outer anterior toe, 11.5–12 (11.7).<sup>a</sup>

*Adult female*.—Length (skin), 133.5; wing, 84; tail, 44; exposed culmen, 16.5; tarsus, 15; outer anterior toe, 11.5.<sup>b</sup>

British Honduras (pine ridge near Manatee Lagoon; Ycacos Lagoon).

*Dryobates scalaris leucoptilurus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 141, 146 (Pine Ridge, near Manatee Lagoon, British Honduras; coll. Carnegie Mus.).

<sup>a</sup> Two specimens.

<sup>b</sup> One specimen.



**DRYOBATES SCALARIS SINALOENSIS** Ridgway.

**MAZATLÁN WOODPECKER.**

Similar to *D. s. azelus*, but decidedly larger and with sides of chest, etc., streaked instead of spotted with black; similar to *D. s. agnus*, but decidedly smaller.

*Adult male*.—Length (skins), 151–156 (153); wing, 94–95 (94.5); tail, 43.5–53 (48.4); exposed culmen, 19–21.5 (20.3); tarsus, 16.5–17 (16.8); outer anterior toe, 12–13 (12.6).<sup>a</sup>

*Adult female*.—Length (skins), 140–157 (151); wing, 93–96 (94.6); tail, 53.5–55.5 (54.5); exposed culmen, 17.5–19 (18.2); tarsus, 16–17 (16.3); outer anterior toe, 11–12.5 (11.8).<sup>b</sup>

Western Mexico, in State of Sinaloa (Mazatlán; Presidio de Mazatlán; Culiacán; Plomosas; Altata; Mount Juan Lisiarraga).

*Picus lucasianus* (not *P. lucasanus* Xantus) FINSCH, Abh. Nat. Ver. Bremen, 1870, 354 (Mazatlan, Sinaloa).

*Picus scalaris* (not of Wagler) LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 294, part (Mazatlan).

*Dendrocopus scalaris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 246, part (in synonymy).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part (Mazatlan; Presidio de Mazatlan).

[*Picus scalaris*] var. *graysoni* BAIRD, in Baird, Brewer, and Ridgway's Hist. N. Am. Birds, ii, 1874, 517, part (Mazatlan).

*Picus scalaris* var. *graysoni* LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 294, part (Mazatlan).

*D[ryobates] scalaris sinaloensis* RIDGWAY, Man. N. Am. Birds, Sept. 27, 1887, 285 (Mazatlan, Sinaloa; coll. U. S. Nat. Mus.).

*Dryobates scalaris sinaloensis* RIDGWAY, Man. N. Am. Birds, 1887, 592; 2d ed., 1896, 613.—LANTZ, Trans. Kansas Ac. Sci. for 1896–97 (1899), 220 (Altata, Sinaloa).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 352 (Juan Lisiarraga, s. Sinaloa).—OBERHOLSER, Proc. U. S. Nat. Mus., xli, 1911, 140, 149 (monogr.).

**DRYOBATES SCALARIS GRAYSONI** (Baird).

**TRES MARIAS WOODPECKER.**

Similar to *D. s. sinaloensis*, but decidedly larger, bars on lateral rectrices averaging broader (except on proximal portion of inner web, where usually narrower), primary coverts usually without trace of whitish spots, and black bars on back, etc., decidedly broader; differing from *D. s. agnus* in the same characters (except width of bars on lateral rectrices) and in smaller size (except bill and feet, which are slightly larger).

*Adult male*.—Length (skins), 157–183 (171); wing, 96.5–99 (97.7); tail, 51–57 (54.5); exposed culmen, 20.5–23 (22.1); tarsus, 16.5–18 (17.4); outer anterior toe, 12.5–13 (12.9).<sup>c</sup>

<sup>a</sup> Four specimens.

<sup>b</sup> Five specimens.

<sup>c</sup> Nine specimens.

*Adult female*.—Length (skins), 159–172 (166); wing, 92–98 (95); tail, 49–56 (53.6); exposed culmen, 18.5–20 (19.3); tarsus, 16.5–17.5 (17); outer anterior toe, 11.5–12.5 (12).<sup>a</sup>

Tres Marias Islands (Maria Madre Island; Cleofa Island), western Mexico.

*Picus lucasianus* (not *P. lucasanus* Xantus) FINSCH, Abh. Nat. Ver. Bremen, 1870, 354, part (Tres Marias).

*Picus scalaris* (not of Wagler) GRAYSON, Proc. Bost. Soc. N. H., xiv, 1871, 273 (Tres Marias).

*Dendrocopus scalaris* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part (Tres Marias; crit.).

[*Picus scalaris*] var. *graysoni* BAIRD, in Baird, Brewer, and Ridgway's Hist. N. Am. Birds, ii, 1874, 501, 517, part (type from Tres Marias Islands, w. Mexico; coll. U. S. Nat. Mus.).

*Picus scalaris* var. *graysoni* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 515 (in synonymy under *P. scalaris*).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 294, part (Tres Marias; habits; crit.).

[*Dryobates*] *scalaris graysoni* RIDGWAY, Man. N. Am. Birds, 1887, 285.

*Dryobates scalaris graysoni* NELSON, North Am. Fauna, no. 14, 1899, 43 (Tres Marias; habits; crit.).—BAILEY (H. H.), Auk, xxiii, 1906, 388 (Cleofa I., Tres Marias).—OBERHOLSER, Proc. U. S. Nat. Mus., xli, 1911, 141, 148 (monogr.).

[*Dendrocopus scalaris*.] Subsp.  $\beta$ . *Dendrocopus graysoni* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 250.

#### DRYOBATES SCALARIS AZELUS Oberholser.

##### MICHOACÁN WOODPECKER.

Similar to *D. s. parvus*, but wing averaging slightly longer, bill and feet smaller (the former more slender), lateral rectrices with black bars narrower, on outer web confined to terminal portion; similar in coloration (including pattern of lateral rectrices) to *D. s. sinaloensis*, but decidedly smaller, and sides of chest, etc., spotted instead of streaked.

*Adult male*.—Length (skin), 156.5; wing, 92; tail, 48.5; exposed culmen, 18.5; tarsus, 15.5; outer anterior toe, 11.<sup>b</sup>

States of Michoacán (La Salada), Oaxaca (Oaxaca City; Tlalcolula; Sola), and Guerrero (Amula), southwestern Mexico. (Probably also eastward to southern Puebla.<sup>c</sup>)

*Dryobates scalaris azelus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 141, 147 (La Salada, Michoacán, s. w. Mexico; coll. U. S. Nat. Mus.).

<sup>a</sup> Four specimens.

<sup>b</sup> One specimen (type of the subspecies).

<sup>c</sup> A specimen from Chietla, southern Puebla, in the collection of the Comision Geografica Exploradora de Mexico, which I examined in 1886, apparently agrees in size and color characters with the type of this form. (See Proc. U. S. Nat. Mus., iii, 1886, 159, where, by a misprint, the length of wing is given as 2.80 instead of 3.80 inches=96.52 mm. The length of wing, as thus corrected, is considerably greater than in the type of *D. s. azelus*, as given above; but at that time the wing was measured by laying it flat against a measuring stick, by which method the wing of the type of *D. s. azelus* measures 94 mm.)

**DRYOBATES SCALARIS AGNUS** Oberholser.**CAMOÁ WOODPECKER.**

Similar to *D. s. sinaloensis*, but decidedly larger.

*Adult male*.—Length (skins), 165–170 (167.5); wing, 100–101.5 (100.8); tail, 58–59.5 (58.8); exposed culmen, 20–23 (21.5); tarsus, 17; outer anterior toe, 13.<sup>a</sup>

*Adult female*.—Length (skins), 160–161.5 (161); wing, 95–98.5 (96.8); tail, 56.5–60.5 (58.5); exposed culmen, 19.5–20 (19.8); tarsus, 16–16.5 (16.3); outer anterior toe, 12.<sup>b</sup>

Southern Sonora (Camoa; Batamotál).

*Dryobates scalaris agnus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 140, 150 (Camoa, Rio Mayo, Sinaloa, w. Mexico; coll. U. S. Nat. Mus.).

**DRYOBATES SCALARIS LUCASANUS** (Xantus).**SAN LUCAS WOODPECKER.**

Similar to *D. s. agnus*, but decidedly larger (especially bill and feet), black bars on back, etc., broader (usually much broader) than white ones, white bars on wings usually decidedly narrower, and black markings on lateral under parts usually shorter and broader (spots rather than streaks).

*Adult male*.—Length (skins), 174–191 (184); wing, 100–105 (102); tail, 60.5–66 (63); exposed culmen, 23.5–25 (24.5); tarsus, 18.5–19.5 (19.1); outer anterior toe, 13–14.5 (14).<sup>b</sup>

*Adult female*.—Length (skins), 168–182 (175); wing, 95–102 (99.2); tail, 57–69 (63.8); exposed culmen, 19–22 (20.5); tarsus, 17–18 (17.7); outer anterior toe, 12.5–13 (12.8).<sup>b</sup>

Cape San Lucas district of Lower California (Cape San Lucas; San José del Cabo; La Laguna; La Paz; San Ignacio; Rosarito; Santo Domingo; Miraflores; Todos Santos; Pescadero, 10 miles south of Todos Santos; Santa Anita; El Cajoncito; San Francisco Mountains; Victoria Mountains; Santa Margarita Island).

*Picus lucasanus* XANTUS, Proc. Ac. Nat. Sci. Phila., Nov., 1859, 298 (Cape San Lucas, Lower California; coll. U. S. Nat. Mus.).—BAIRD, Proc. Ac. Nat. Sci. Phila., 1859, 302 (Cape San Lucas; crit.).—MALHERBE, Mon. Pict., i, 1861, 166.—SCLATER, Cat. Am. Birds, 1862, 333.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 195.—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 50.—ELLIOT, Illustr. New and Unfig. Birds N. Am., i, 1869, 7.

*P[icus] lucasanus* SUNDEVALL, Consp. Av. Picin., 1866, 20.

*[Picus] lucasanus* GRAY, Hand-list, ii, 1870, 186, no. 8612.

*D[ictyopipo] lucasana* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 75.

*Picus scalaris* var. *lucasanus* BAIRD, in COOPER, Orn. Calif., 1870, 381 (crit.).—

BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 519.

*[Picus scalaris]* var. *lucasanus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 501, 517.

*Picus scalaris* . . . var. *lucasanus* COUES, Check List, 1873, no. 297b.

<sup>a</sup> Two specimens.

<sup>b</sup> Ten specimens.



*Picus scalaris lucasanus* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 189, 219, 229; Nom. N. Am. Birds, 1881, no. 363a.—COUES, Check List, 2d ed., 1882, no. 436.—BELDING, Proc. U. S. Nat. Mus., v, 1882, 543 (Cape district, Lower California); vi, 1883, 349 (Victoria Mts., Lower California).

*P[icus] s[calaris] lucasanus* COUES, Key N. Am. Birds, 2d ed., 1884, 482.

*Dryobates scalaris lucasanus* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 396a; 2d ed., 1895, no. 396a, part; 3d ed., 1910, 188, part.—BRYANT (W. E.), Proc. Calif. Ac. Sci., 2d ser., 1889, 286 (Cape San Lucas, Victoria Mts., Santa Margarita I., and north to 28°).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., xiii, 1890, 137 (Cape San Lucas).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 65, part.—OBERHOLSER, Proc. U. S. Nat. Mus., xli, 1911, 141, 150 (monogr.).

*D[ryobates] scalaris lucasanus* RIDGWAY, Man. N. Am. Birds, 1887, 285.

*Dryobates lucasanus* BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 102 (Cape San Lucas district; habits; crit.).

[*Dendrocopus scalaris*.] Subsp.  $\alpha$ . *Dendrocopus lucasanus* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 250.

[*Dendrocopus*] *lucasanus* SHARPE, Hand-list, ii, 1900, 215.

*Dendrocopus scalaris* (not *Picus scalaris* Wagler) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part.

#### DRYOBATES SCALARIS EREMICUS Oberholser.

##### SAN FERNANDO WOODPECKER.

Similar to *D. s. lucasanus*, but larger, white bars on back, etc., averaging still narrower (usually but little more than half as wide as the black bars), and posterior under parts usually much more heavily barred.

*Adult male*.—Length (skins), 182–202 (190); wing, 104–111 (106.6); tail, 64–72 (68); exposed culmen, 24–28.5 (26.9); tarsus, 19.5–21 (20.4); outer anterior toe, 13–15 (14).<sup>a</sup>

*Adult female*.—Length (skins), 170–187 (178); wing, 98.5–104.5 (101.4); tail, 66–67.5 (66.9); exposed culmen, 22.5–25.5 (23.9); tarsus, 17.5–19.5 (18.9); outer anterior toe, 13–14 (13.4).<sup>b</sup>

Pacific coast district of northern Lower California (San Quintín; 45 miles east of San Quintín; Rio San Simón; Arroyo San Simón; San Fernando; Rosário; Ubai; Nachoguero Valley; Rancho Layla; Playa Maria; Playa Maria Bay; San Telmo; Santa Ana; San Andrés; Ensenada; San Pedro Martir Mountains?<sup>c</sup>).

(?) *Dryobates scalaris lucasanus* (not *Picus lucasanus* Xantus) ANTHONY, Zoë, iv, 1893, 236 (San Pedro Martir Mts.).

*Dryobates scalaris lucasanus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 396a, part; 3d ed., 1910, 188, part.—ANTHONY, Auk, xii, 1895, 138 (San Fernando, Lower California; crit.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 65, part.

<sup>a</sup> Ten specimens.

<sup>b</sup> Five specimens.

<sup>c</sup> Specimens from San Pedro Martir Mountains not examined.

*Dendrocopus scalaris lucasanus* THAYER and BANGS, Condor, ix, 1907, 136 (Santa Ana and San Andres, Lower California).

(?) *Dryobates nuttallii* (not *Picus nuttallii* Gambel?) BRYANT (W. E.), Proc. Ac. Nat. Sci. Phila., 2d ser., 1889, 286 (San Rafael and Ensenada, Lower California; see Anthony, Zoö, iv, 1893, 236).

*Dryobates scalaris eremicus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 141, 151 (San Fernando, n. w. Lower California; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxix, 1912, 383.

## DRYOBATES SCALARIS CACTOPHILUS Oberholser.

### CACTUS WOODPECKER.

Similar to *D. s. symplectus*, but slightly larger, and with black bars on back., etc., decidedly broader.

*Adult male*.—Length (skins), 156–181 (170); wing, 99–107.5 (104); tail, 56.5–68 (60.8); exposed culmen, 21–27 (22.7); tarsus, 16.5–19.5 (18.1); outer anterior toe, 12–14 (12.9).<sup>a</sup>

*Adult female*.—Length (skins), 148–175 (162); wing, 97–106 (101.5); tail, 56–65 (62.4); exposed culmen, 17.5–22 (19.8); tarsus, 16–18.5 (17.1); outer anterior toe, 11.5–13 (12.2).<sup>b</sup>

Lower and Upper Austral zones from extreme western Texas (Fort Hancock; Fort Davis; Davis Mountains; El Paso; Chisos Mountains; 20 miles southwest of Toyahvale) through New Mexico and Arizona to southern California (Hesperia, Needles, and Cushenbury Springs, San Bernardino County; San Gorgonio Pass, Riverside County; Whitewater, Walters, Vallecito, Yuma, and Mount Spring, San Diego County) and northern Lower California (Colony, etc., lower Colorado River; delta of Colorado River; Salton River; Gardners Laguna; Cócopah Major Mountains); north to southern Nevada (east

<sup>a</sup> Thirty-five specimens.

<sup>b</sup> Thirty-six specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from New Mexico.....	104.2	60.5	22.1	17.6	12.7
Ten adult males from Arizona.....	105	61.9	23.1	18.9	13.2
Two adult males from northern Lower California.....	105.5	63	24.5	19.2	13.5
Four adult males from northern and middle Sonora.....	100.2	59.9	22.2	16.9	12.6
Five adult males from Chihuahua.....	104.2	61.1	22.1	17.8	12.6
Four adult males from northern Durango.....	103.5	58.1	23.5	18.5	13.1
FEMALES.					
Eight adult females from New Mexico.....	102.1	61.4	20.4	16.9	12.1
Ten adult females from Arizona.....	100.8	59.6	19.3	17.2	12.1
Five adult females from southeastern California (1) and north- ern Lower California (4).....	100.7	59.8	20.5	17.5	12.5
Seven adult females from northern and middle Sonora.....	100.1	60	19.3	16.7	12.2
Three adult females from Chihuahua.....	104	69.5	20	17.2	11.8
Three adult females from northern Durango.....	104	62.5	19.8	17.5	12

base of Charleston Mountains; Vegas Wash) and southern Utah (Santa Clara River); south through northern and middle Sonora (Espia; Boca Grande; Magdalena; Bacadahuahy; Hermosillo; Moctezuma; Guadalupe; Senoyta; Pozo de Luís; Colorado River below Colónia Diaz; near Nogales; Oputo; Nacori; Guaymas; Santa Cruz) and Chihuahua (Colónia Diaz; Colónia Juarez; Casas Grandes; Indines; Chihuahua; San Diego; Rio Grande) to northern Durango (Cienega de las Vacas; Rio Sestín; Las Bocas; Rancho Baillón; Rosário; Matalotes).

*Picus scalaris* (not of Wagler) BAIRD, in Rep. Stansbury's Surv. Great Salt Lake, 1852, 333 (California; New Mexico); Rep. Pacific R. R. Surv., ix, 1858, 94, part (Chihuahua, Boca Grande and Espia, Sonora; Colorado R., California; Gila R. Arizona); Cat. N. Am. Birds, 1859, no. 79, part; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 5, part (Boca Grande; Espia; Gila R.; Colorado R.).—KENNERLY, Rep. Pacific R. R. Surv., iv, pt. vi, 1856, 16 (Camp 112, "New Mexico"); x, pt. iv, no. 3, 1859, 22, part (Bill Williams Fork and Colorado R., Arizona).—HEERMANN, Rep. Pacific R. R. Surv., x, no. 1, 1859, 18, part (s. California); x, pt. iv, no. 2, 1859, 57, part (Vallecito and Ft. Yuma, s. California).—COUES, Ibis, 1865, 159 (Ft. Whipple, Arizona); Proc. Ac. Nat. Sci. Phila., 1866, 52 (Ft. Whipple); Check List, 1873, no. 297, part; 2d ed., 1882, no. 434, part.—ELLIOT, Illustr. New and Unfig. Birds N. Am., i, 1869, 7, part.—COOPER, Orn. Calif., 1870, 379, part (Colorado R. and adjacent mountains).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 515, part.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 133 (30 miles s. of Apache, Gila R., and San Pedro R., Arizona); Zool. Expl. W. 100th Merid., 1875, 390 (San Pedro R., Camp Lowell, Cienega, Gila R., etc., Arizona).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, part; Nom. N. Am. Birds, 1881, no. 363, part.—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 22 (Tucson and Cienega, Arizona).—MORCOM, Bull. Ridgw. Orn. Club, no. 2, 1887, 41 (Yuma, California).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 35 (Oputo and Bacadehuachy, n. e. Sonora; San Diego, n. w. Chihuahua).

[*Picus*] *scalaris* COUES, Key N. Am. Birds, 1872, 192, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

*P[icus] scalaris* COUES, Key N. Am. Birds, 2d ed., 1884, 481, part.

*Picus (Dyctiopicus) scalaris* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxviii, part.

*Dryobates scalaris* RIDGWAY, Proc. U. S. Nat. Mus., viii, Sept. 2, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 396, part.—SCOTT, Auk, iii, 1886, 426 (Pinal, Pima, and Gila counties, Arizona).

*Dendrocopos scalaris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 246, part (localities in New Mexico and Arizona; San Gorgonio Pass, California; Indines, Chihuahua; Hermosillo and Moctezuma, Sonora).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part (Arizona; Hermosillo and Guaymas, and Guadalupe, Sonora; Indines, Chihuahua).

[*Picus scalaris*] var. *bairdi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 517, part (Arizona, etc.).

*D[ryobates] scalaris bairdi* (not *Picus bairdi* Malherbe) RIDGWAY, Man. N. Am. Birds, 1887, 285, part.

*Dryobates scalaris bairdi* AMERICAN ORNITHOLOGISTS' UNION, Suppl. to Check List, 1889, 22, part; Check List, 2d ed., 1895, no. 396, part.—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 116 (Santa Catalina Mts., Arizona, chiefly in oak



- belt).—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 47 (Hesperia, e. of Cajon Pass, s. e. California; e. base Charleston Mts., and Vegas Wash., s. Nevada; near mouth of Santa Clara R., s. Utah; junction of Bear Creek and Virgin R.; Arizona).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 63, part.—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1900, 344 (Matalotes, etc., n. w. Durango; crit.).—HUNN, Auk, xxiii, 1906, 421 (Silver City, New Mexico, resident).—GRINNELL (J.), Univ. Calif. Pub. Zool., v, 1908, 61 (base of San Bernardino Mts., at Cushenbury Springs, s. California, Aug.).—HOLLISTER, Auk, xxv, 1908, 458 (Needles, s. e. California, common).
- Dryobates scalaris bairdii* STEPHENS, Auk, vii, 1890, 297 (Colorado Desert).
- Dryobates scalaris lucasanus* (not *Picus lucasanus* Xantus) AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 396a, part; 3d ed., 1910, 188, part.—MILLER (G. S.), Auk, xi, 1894, 178 (Whitewater, San Diego Co., California).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 65, part.—STONE, Proc. Ac. Nat. Sci. Phila., 1905, 681 (Colony and Cocopah Major Mts., Colorado delta, Lower California).
- Dryobates lucasanus* GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 37 (near Whitewater, Colorado Desert, breeding).
- Dryobates scalaris cactophilus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 140, 152 (Tucson, Arizona; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxix, 1912, 383.

#### DRYOBATES SCALARIS CENTROPHILUS Oberholser.

##### JALISCO WOODPECKER.

Similar to *D. s. cactophilus*, but slightly smaller, black bars on back, etc., averaging decidedly broader, the white bars narrower and (usually) less purely white, and under parts slightly darker; decidedly smaller than *D. s. bairdi*, with under parts slightly paler, and black bars of back, etc., averaging slightly narrower.

*Adult male*.—Length (skins), 152–185 (168); wing, 100–104.5 (102.6); tail, 56–63.5 (58); exposed culmen, 19.5–23 (21.1); tarsus, 16.5–17.5 (17); outer anterior toe, 11.5–13 (12.2).<sup>a</sup>

*Adult female*.—Length (skins), 142–171 (153); wing, 97–103.5 (99.6); tail, 54–62.5 (56.9); exposed culmen, 16.5–18.5 (17.5); tarsus, 16–17 (16.4); outer anterior toe, 10.5–12 (11.4).<sup>b</sup>

Western Mexico, from southern Durango (Ciudad Durango) through Zacatecas (San Juan Capistrano) and Jalisco (Atemajac; Ocotlán; Ameca; Zapotlán; Beltrán; Zacoalco; Arroyo de Gavilán; La Pisagua; Las Canoas; Guadalajara; Volcan de Colima; Bolaños; Mineral de San Sebastián near Mascota), to Michoacán (Patambán; Uruapám) and Territory of Tepic (Arroyo de Gavilán, near Amatlán).

*Picus scalaris* (not of Wagler) HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 246, part (Santa Ana, Guadalajara, Zapotlan, Beltran, Zacoalco, and Huayimic, 6,000 ft., Jalisco).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part (Volcan de Colima, Bolaños, Mineral de San Sebastián near Mascota, etc., Jalisco).

*Dryobates scalaris centrophilus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 140, 157 (Ameca, Jalisco, west-central Mexico; coll. U. S. Nat. Mus.).

<sup>a</sup> Five specimens.

<sup>b</sup> Seven specimens.

**DRYOBATES SCALARIS SYMPLECTUS** Oberholser.

**TEXAS WOODPECKER.**

Similar to *D. s. scalaris* but decidedly larger; white bars of back, etc., broader, purer white; under parts decidedly paler, much less buffy.

*Adult male*.—Length (skins), 154–180 (165); wing, 98–107 (102.2); tail, 53.5–61 (57.1); exposed culmen, 20–24 (22.3); tarsus, 16–18.5 (17.6); outer anterior toe, 12–13.5 (12.6).<sup>a</sup>

*Adult female*.—Length (skins), 152–173 (161); wing, 96.5–105 (100); tail, 52.5–60.5 (56.9); exposed culmen, 18–21 (20); tarsus, 16.5–18.5 (17.3); outer anterior toe, 11–13 (12.1).<sup>b</sup>

Middle and northern Tamaulipas (Forlón; Villagrán; Soto la Marina; Miér; Camargo; Matamoras; Nuevo Laredo; Xicotencatl; Rio Pílon; Victoria; San Fernando de Presas), Nuevo León (Rodríguez; Santa Catarina; Monteréy; Rancho San Juan; Boquillo) and northern Coahuila (Sabinas) northward through southern, central, and western Texas (east of Pecos River and, mostly, west of 97th meridian) to southeastern Colorado (Pueblo, Baca, Otero, and Huérfano counties).

*Picus scalaris* (not of Wagler) WOODHOUSE, in Rep. Sitgreaves' Expl. Zuni and Col. R., 1853, 89 (San Antonio and e. of Pecos R., Texas).—KENNERLY, Rep. Pacific R. R. Surv., x, pt. iv, no. 3, 1859, 22, part (San Antonio).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 94, part (Rio Grande and San Pedro, Texas; Tamaulipas; Nuevo Leon); Cat. N. Am. Birds, 1859, no. 79, part; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 5, part, pl. 3 (Tamaulipas; Nuevo Leon; Rio Grande and San Pedro, Texas).—HEERMANN, Rep. Pacific R. R. Surv., x, no. 1, 1859, 18, part (Texas); x, pt. iv, no. 2, 1859, 57, part (Texas).—DRESSER, Ibis, 1865, 313, 468 (s. Texas).—ELLIOT, Illustr. New and Unfig. N. Am. Birds, i, 1869, 7, part.—COOPER, Orn. Calif., 1870, 379, part.—COUES, Check List, 1873, no. 297, part; 2d ed., 1882, no. 434, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 515, part, pl. 50, figs. 4, 5.—MCCAULEY, Rep. U. S. Geol. and Geog. Surv. Terr., iii, 1877, 679 (McClellan and Mulberry creeks, etc., Red River Valley, Texas).—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 150 (Ft. Brown, Texas; descr. eggs).—SENNETT, Rep. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 38 (Brownsville and Hidalgo, Texas); v, 1879, 415 (Lomita Ranch, Texas).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, part; Nom. N. Am. Birds, 1881, no. 363, part.—BROWN (N. C.), Bull. Nutt. Orn. Club, vii, 1882, 40 (Boerne, Kendall Co., Texas, resident).—NEHRLING, Bull. Nutt. Orn. Club, vii, 1882, 170 (Houston, etc., Texas).—OGILBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 58 (Navarro Co., Texas, resident; habits).

[*Picus*] *scalaris* COUES, Key N. Am. Birds, 1872, 192, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99, part.

*Picus* (*Dyctiopicus*) *scalaris* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxviii, part.

<sup>a</sup> Nineteen specimens, from Texas (10), northern Tamaulipas (3), Nuevo León (5), and Coahuila (1).

<sup>b</sup> Nineteen specimens, from Texas (10) and Tamaulipas (9).

- P[icus] scalaris* COUES, Key N. Am. Birds, 2d ed., 1884, 481, part.
- Dryobates scalaris* RIDGWAY, Proc. U. S. Nat. Mus., viii, Sept. 2, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 396, part.—LLOYD, Auk, iv, 1887, 190 (Tom Green and Concho counties, Texas).—HANCOCK, Bull. Ridgw. Orn. Club, no. 2, 1887, 16 (Corpus Christi, Texas).—HASBROUCK, Auk, vi, 1889, 238 (Eastland Co., Texas).
- Dendrocopus scalaris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 246, part, 571 (localities in Texas; Nuevo Leon; Nuevo Laredo, Soto la Marina, and Sierra Madre near Victoria, Tamaulipas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part (Nuevo Laredo, Topo Chico, and Hacienda de las Escobas, Nuevo Leon; Sierra Madre near Victoria and Soto la Marina, Tamaulipas; Texas).
- [*Dendrocopus*] *scalaris* SHARPE, Hand-list, ii, 1900, 215, part.
- [*Picus scalaris*] var. *scalaris* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 517, part (Texas).
- D[ryobates] scalaris bairdi* (not *Picus bairdi* Malherbe) RIDGWAY, Man. N. Am. Birds, 1887, 285, part (Texas).
- Dryobates scalaris bairdi* BECKHAM, Proc. U. S. Nat. Mus., x, 1887, 637, 640, 664 (Bexar and Bee counties, Texas).—COOKE, Bird Migr. Miss. Val., 1888, 129 (San Angelo, etc., Texas); Bull. Col. Agric. Coll., no. 37, 1897, 83 (Pueblo and Huerfano counties, s. e. Colorado, resident); no. 44, 1898, 162 (St. Charles Canyon, Pueblo Co., Colorado, 1 pair breeding); Auk, xxvi, 1909, 413 (Baca Co., Colorado; Springfield, Baca Co., Colorado, April, May; Swink, Otero Co., Colorado, Oct.).—AMERICAN ORNITHOLOGISTS' UNION, Suppl. to Check List, 1889, 22, part; Check List, 2d ed., 1895, no. 396, part; 3d ed., 1910, 188, part.—ATTWATER, Auk, ix, 1892, 235 (San Antonio, Texas, resident).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 106 (Corpus Christi, abundant).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 63, part.—CARROLL, Auk, xvii, 1900, 344 (Refugio Co., Texas).
- Dryobates scalaris symplectus* OBERHOLSER, Proc. U. S. Nat. Mus., xli, June 30, 1911, 140, 155 (mouth of Nueces River, Texas; coll. U. S. Nat. Mus.).

### DRYOBATES SCALARIS BAIRDI (Malherbe).

#### BAIRD'S WOODPECKER.

Similar to *D. s. scalaris* but decidedly larger and much darker; black bars on back, etc., and on lateral rectrices equal to or exceeding white interspaces in width, under parts more grayish (less buffy) brownish, and forehead dark sooty instead of light smoky brownish.

*Adult male*.—Length (skins), 167–180 (173); wing, 102–107.5 (104.4); tail, 56–62.5 (60.1); exposed culmen, 20–23.5 (22.1); tarsus, 17–18.5 (17.7); outer anterior toe, 12–14 (12.7).<sup>a</sup>

*Adult female*.—Length (skins), 162–175 (169); wing, 97.5–103 (101.3); tail, 57–62 (59.7); exposed culmen, 19.5–20.5 (20); tarsus, 16–17 (16.7); outer anterior toe, 12–13 (12.3).<sup>b</sup>

Southeastern portion of Mexican plateau, in States of Puebla (Chalchicomula; Atlixco; Puente Colorado; San Miguel Molino; Pinál, near Puebla), San Luis Potosí (Hacienda La Parada; Ahualulco; Moctezuma; Hacienda Angostura, Rio Verde), Hidalgo (Tula;

<sup>a</sup> Seven specimens.

<sup>b</sup> Six specimens.



Pachuca), Guanajuato (Silao), and Coahuila (La Ventura; Carneros; Jarál); Mexico (Valley of Mexico; Tetelco, Tlalpám; Tetelco, Xochimilco)?

*Picus bairdi* MALHERBE, Mon. Pict., i, 1861, 118 (Mexico;<sup>a</sup> ex Sclater, manuscript); iii, 1861, pl. 27, figs. 7, 8.—SCLATER, Cat. Am. Birds, 1862, 333, part (n. Mexico); Proc. Zool. Soc. Lond., 1864, 117 (near City of Mexico).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 196, part (northern Mexico).—GRAY, List Birds Brit. Mus., Capit. and Pict., 1868, 48 (north Mexico).

(?)*P[icus] bairdii* SUNDEVALL, Consp. Av. Picin., 1866, 19 (n. Mexico).

[*Picus bairdi* GRAY, Hand-list, ii, 1870, 186, no. 8609.

(?)*D[ictyopipo] bairdi* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 76 (n. Mexico).

*Dryobates scalaris bairdi* RIDGWAY, Man. N. Am. Birds, 1887, 285, part.

*Picus scalaris* (not of Wagler) LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 34 (Puente Colorado, Puebla).—(?)HERRERA, La Naturaleza, (2) i, 1891, 179 322 (Valley of Mexico).

*Dendrocopus scalaris* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 246, part (Atlixco, Pinal, and San Miguel Molino, Puebla; Tetelco de Tlalpam, and Tetelco de Xochimilco, Mexico?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 435, part (Guanajuato; plains of San Luis Potosí; Moctezuma, San Luis Potosí; Puente Colorado, Puebla; Valley of Mexico, Tetelco, and Chimalpa, Mexico).

*Dryobates scalaris bairdi* JOUY, Proc. U. S. Nat. Mus., xvi, 1894, 785 (Ahualulco, San Luis Potosí).—OBERHOLSER, Proc. U. S. Nat. Mus., xli, 1911, 140, 158 (monogr.).

#### DRYOBATES STRICKLANDI (Malherbe).

##### STRICKLAND'S WOODPECKER.

*Adult male*.—Crown dark sooty brown, seal brown, or very dark sepia, fading into paler sooty brown on forehead and nasal plumes; occiput and upper nape bright poppy or vermilion red; upper parts dark sooty brown or seal brown, the median portion of back and whole rump, broadly barred or transversely spotted with white, the outer webs of primaries (except outermost) with quadrate spots of white, these becoming smaller and less numerous on inner (proximal) quills; upper tail-coverts and tail blackish brown or brownish black, the two lateral rectrices (on each side) mostly white, with several, usually broad, bars of black on distal portion, the third with more or less of white on distal portion, mostly on outer web; a broad supra-auricular streak of white and a broad suborbital and sub-auricular stripe of the same, originating at rictus and extending to side of neck, where involving the greater part of that area; auricular region very dark sooty brown, the malar region similar, forming a conspicuous, usually broad and uninterrupted, stripe of that color; under parts dull white, heavily streaked, spotted, and barred with very dark sooty brown, the markings mostly longitudinal on foreneck

<sup>a</sup> Type locality fixed by Oberholser (Proc. U. S. Nat. Mus., xli, 1911, 159) as State of Hidalgo, south-central Mexico.

and chest, transverse on flanks and under tail-coverts, on the latter more or less cordate or broadly V-shaped; bill dusky, usually paler (more grayish or horn colored) on mandible; feet dusky (in dried skins); length (skins), 164–184 (174); wing, 112–117.5 (115.3); tail, 64–71.5 (67.5); culmen, 20–21 (20.6); tarsus, 19–20 (19.4); outer anterior toe, 12–13 (12.7).<sup>a</sup>

*Young male*.—Similar to the adult male, but red of occiput extending over more or less (sometimes greater part) of crown, and under parts with the white more brownish and markings less sharply defined.

*Adult female*.—Similar to the adult male, but without any red on head, the entire occiput and nape being uniform dark sooty brown, like hindneck and crown; length (skins), 166–175 (170); wing, 111–118 (114.1); tail, 62–70 (66.6); culmen, 18–19.5 (18.7); tarsus, 17.5–19.5 (18.6); outer anterior toe, 11.5–13 (12.3).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Jalapa; Cofre de Perote; Las Vigas, 8,000 feet), Puebla (Chalchicomula; Mount Orizaba, up to 11,000 feet; San Andrés; Suapám; San Miguél Molino), Mexico (Tetelco, Xochimilco; Mount Popocatépetl; Rio Frio, Ixtacihuatl), and Morelos (Huitzilac).

*P[icus]* (*Leuconotopicus*) *stricklandi* MALHERBE, Rev. Zool., Oct., 1845, 373 ("Mexico;" coll. —.)

*Picus stricklandi* MALHERBE, Mém. Acad. Metz, xxx, 1849, 347; Bull. Soc. d'Hist. Nat. Moselle, 1849, 14; Mon. Picid., i, 1861, 108, part; iii, 1861, pl. 28, figs. 4, 5, 6.—SCLATER, Proc. Zool. Soc. Lond., 1859, 367 (Jalapa, Vera Cruz); Cat. Am. Birds, 1862, 334 (Jalapa).—SUNDEVALL, Consp. Av. Picin., 1866, 20, part (Mexico).—SALVIN, Cat. Strickland Coll., 1882, 387 (Mexico).—HARGITT, Ibis, 1886, 112–114, in text (crit.).

*P[icus]* *stricklandi* BONAPARTE, Consp. Av., i, 1850, 137.

*[Picus]* *stricklandi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99.

*[Phrenopicus]* *stricklandi* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).

*T[hrenopipo]* *stricklandi* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 71 (Jalapa).

*D[ryobates]* *stricklandi* RIDGWAY, Man. N. Am. Birds, 1887, 286.

*Dryobates stricklandi* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 214 (base of Volcan de Orizaba, Puebla, 8,700 ft.).—COX, Auk, xii, 1895, 357 (Volcan de Orizaba, 11,000 ft.).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 43 (Las Vigas, Vera Cruz, 8,000 ft.).

*Dendrocopus stricklandi* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 243 (Tetelco, Xochimilco, Mexico; Jalapa, and Las Vigas, near Jalapa, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 433 (Tetelco, and Rio Frio, Ixtacihuatl, Mexico; San Andres, San Miguel Molino, and Suapam, Puebla; Jalapa, Cofre de Perote, and base of Volcan de Orizaba, Vera Cruz), 571 (Rio Frio, Ixtacihuatl, Mexico).

*[Dendrocopus]* *stricklandi* SHARPE, Hand-list, ii, 1900, 215.

*Picus cancellatus* (not of Wagler) SCLATER, Proc. Zool. Soc. Lond., 1856, 308 (San Andres; Suapam).

<sup>a</sup> Five specimens.

## DRYOBATES ARIZONÆ ARIZONÆ (Hargitt).

## ARIZONA WOODPECKER.

Similar to *D. stricklandi*, but without any white on back or rump; brown of back, etc., lighter, and markings on foreneck, chest, and breast in form of large rounded or subcordate spots instead of streaks.

*Adult male in autumn and winter.*—Pileum and hindneck deep sooty brown (warm sepia to dark sepia), becoming paler (more smoky brown) on forehead and nasal tufts, interrupted by a nuchal crescent of bright red (poppy red to scarlet vermilion); auricular region similar, sometimes rather lighter and grayer brown; back, scapulars, wing-coverts, rump, and general color of remiges plain grayish brown (deep broccoli brown or drab), the last (except two outermost) marked on outer webs with rather small quadrate or triangular spots of white, except on terminal portion, the distal secondaries similarly marked, but with smaller spots; upper tail-coverts and tail similar to or darker than pileum in color, the former sometimes having a few feathers narrowly tipped with white, the two outer pairs of normal rectrices broadly barred with white on terminal portion (about five white bars, including terminal one, on outer web, fewer on inner web, these white bars sometimes broader than the dusky interspaces); inner webs of remiges (except terminal third or more of longer primaries) spotted or broadly barred with white; a narrow postocular stripe and broader rictal stripe, extending posteriorly beneath orbital and auricular regions, white, both confluent posteriorly with a large white area on side of neck; a broad, usually more or less broken or interrupted malar stripe of dark sooty brown or sepia (the anterior portion usually barred or spotted with whitish), continued posteriorly to lower portion of sides of neck, where much broader than anteriorly; under parts dull white, spotted, except on chin and at least upper part of throat, with dark sooty brown, the spots largest and usually roundish or sub-cordate, but sometimes guttate on chest or breast, the flanks and under tail-coverts broadly barred with dark sooty brown or dusky; bill horn color, darker toward culmen; legs and feet grayish olive or greenish gray (in dried skins).

*Adult male in spring and summer.*—Similar to the autumn and winter plumage, but brown of upper parts paler, inclining more or less toward isabella color, and red nuchal crescent more scarlet.

*Adult female.*—Similar to the adult male, but without any red on nape.

*Young male.*—Essentially like the autumnal or winter adult male, but red of head on crown and occiput instead of on nape, only the tips of the feathers being red, forming a large patch, more or less broken, at least anteriorly; spots on breast, etc., smaller, nearly longitudinal, the ground color of under parts more grayish white.



*Young female*.—Not constantly different from the young male, but red of crown and occiput usually (?) more restricted.

*Adult male*.—Length (skins), 179–202 (193); wing, 114–121 (117.3); tail, 63–70.5 (67); culmen, 26.5–28 (27.2); tarsus, 19.5–21 (20.2); outer anterior toe, 13–14 (13.6).<sup>a</sup>

*Adult female*.—Length (skins), 173–190 (180); wing, 109–118 (113.2); tail, 60–68 (63.5); culmen, 23–25.5 (24.1); tarsus, 18–19.5 (18.8); outer anterior toe, 12–13.5 (12.8).<sup>b</sup>

Southwestern New Mexico (Ánimas Mountains), southern Arizona (Huachuca Mountains; Fort Huachuca; east side San Luís Mountains; Santa Rita Mountains; Chiricáhua Mountains; Santa Catalina Mountains; Dragoon Mountains; mountains of Pima and Pinál counties), and southward through Sonora (La Chumata; near Oposura) and Chihuáhua (Piños Altos; Rancheria de los Apaches; 30 miles west of Miñaca; Colonia Garcia; Rio Verde; Temasochic; Temochic; Rio de Urique) to northwestern Durango (Cienega de las Vacas; Arroyo del Buéy; Matalotes).

*Picus stricklandi* (not of Malherbe, 1845) MALHERBE, Mon. Picid., i, 1861, 108, part (descr. adult male), pl. 28, fig. 4.—SUNDEVALL, Consp. Av. Picin., 1866, 20.—HENSHAW, Am. Sportsman, v, 1875, 328 (Santa Rita Mts., Arizona); Zool. Expl. W. 100th Merid., 1875, 389 (Chiricahua Mts., Arizona; habits).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 90.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, 219, 233; Nom. N. Am. Birds, 1881, no. 365.—BREWSTER, Bull. Nutt. Orn. Club, vi, 1881, 72 (Chiricahua Mts.); viii, 1883, 22 (Santa Rita and Chiricahua Mts.; remarks on plumages); Auk, ii, 1885, 199 (Santa Rita Mts.; descr. young male and female).—COUES, Check List, 2d ed., 1882, no. 437.

[*Picus*] *stricklandi* GRAY, Hand-list, ii, 1870, 182, no. 8560.

[*Picus*] *stricklandi* COUES, Key N. Am. Birds, 2d ed., 1884, 482.

*Dryobates stricklandi* RIDGWAY, Proc. U. S. Nat. Mus., viii, Sept. 2, 1885, 355.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 398.—SCOTT, Auk, iii, 1886, 426 (Santa Catalina Mts., Arizona; habits).

*Picus arizonæ* HARGITT, Ibis, 5th ser., iv, no. 2, April, 1886, 115, in text (Santa Rita Mts., Arizona; coll. E. Hargitt).

Locality.	<sup>a</sup> Ten specimens, from Arizona.					<sup>b</sup> Ten specimens.				
	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.										
Ten adult males from Arizona.....	117.3	67	27.2	20.2	13.6					
Four adult males from Durango.....	115	61.6	25.3	18.8	12.8					
Ten adult males ( <i>D. a. fraterculus</i> ) from Jalisco (8), Sinaloa (1), and Zacatecas (1).....	108.9	60.5	23.6	18.9	12.3					
FEMALES.										
Ten adult females from Arizona (9) and New Mexico (1).....	113.2	63.5	24.1	18.8	12.8					
Five adult females from Chihuahua (1) and Durango (4).....	112.9	64	21.8	18.1	11.9					
Ten adult females ( <i>D. a. fraterculus</i> ) from Jalisco (8), Sinaloa (1), and Zacatecas (1).....	108	59.5	20.8	17.9	11.9					

*D[ryobates] arizonæ* RIDGWAY, Man. N. Am. Birds, 1887, 286.

*Dendrocopus arizonæ* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 228 (Santa Rita Mts., Chiricahua Mts., and Pinal Co., Arizona; near Oposura, Sonora; Rio Verde, Temosachic, Temochic, and Rio de Urique, Chihuahua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 434, part.—THAYER and BANGS, Proc. Biol. Soc. Wash., xix, 1906, 19 (La Chumata, n. w. Sonora, breeding).

[*Dendrocopus*] *arizonæ* SHARPE, Hand-list, ii, 1900, 214.

*Dryobates arizonæ* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. Check List, 1889, 22; Check List, 2d ed., 1895, no. 398; 3rd ed., 1910, 188.—ALLEN, Bull. Am. Mus. N. H., v, 1893, 35 (Rancheria de los Apaches, n. w. Chihuahua).—BENDIRE, Life-Hist. N. Am. Birds, ii, 1895, 68.—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 11 (Huachuca Mts., s. Arizona, 4,500–8,000 ft.; habits, molt, etc.); Condor, vii, 1905, 78 (Santa Rita Mts., s. Arizona).—VISHER, Auk, xxvii, 1909, 282 (mts. of Pima Co., Arizona, in oak belt).

*Dryobates arizonæ arizonæ* MILLER (W. DeW.), Bull. Am. Mus. N. H., xxii, 1906, 166 (Matalotes, Cienega de las Vacas, and Arroyo del Buey, n. w. Durango).

### DRYOBATES ARIZONÆ FRATERCULUS Ridgway.

#### COLIMA WOODPECKER.

Similar to *D. a. arizonæ*, but smaller, averaging more heavily spotted beneath, and with white spots on outer webs of primaries smaller (sometimes obsolete).

*Adult male*.—Length (skins), 167–183 (175); wing, 108–112.5 (108.9); tail, 58–64 (60.5); culmen, 23–24.5 (23.6); tarsus, 18–20.5 (18.9); outer anterior toe, 12–13 (12.3).<sup>a</sup>

*Adult female*.—Length (skins), 154–171 (164); wing, 103–113.5 (108); tail, 56–68 (59.5); culmen, 20–22.5 (20.8); tarsus, 17–18.5 (17.9); outer anterior toe, 11.5–12.5 (11.9).<sup>a</sup>

Southwestern Mexico, in States of Sinaloa (Sierra de Choix), Jalisco (Jacalá; Sierra Madre; Los Masos; La Pisagua; Volcan de Colima; Las Canoas; Tonila; Volcan de Nieve; Hacienda San Marcos, 5,200 feet; Sierra de Nayarit; Sierra de Bolaños), Colima (Sierra Madre; Sierra Nevada), and Zacatecas (Sierra de Valparaiso), and Territory of Tepic (Sierra de Nayarit, 8,000 feet).

*D[ryobates] arizonæ fraterculus* RIDGWAY, Man. N. Am. Birds, Sept. 27, 1887, 286 (Sierra Madre, Colima, s. w. Mexico; coll. U. S. Nat. Mus.).

*Dryobates arizonæ fraterculus* RIDGWAY, Man. N. Am. Birds, 1887, 592; 2d ed., 1896, 613.

*Dendrocopus arizonæ* (not of Hargitt, 1886) HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 228, part (Sierra de Nayarit, 8,000 ft., Tepic; Hacienda San Marcos, 5,200 ft., Jalisco).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 434, part (Sierra de Nayarit; Volcan de Colima, Sierra de Bolaños, and Hacienda de San Marcos, Jalisco; and Sierra Nevada de Colima, Colima; Sierra de Valparaiso, Zacatecas).

<sup>a</sup>Ten specimens in each sex, eight from Jalisco, one from Sinaloa, and one from Zacatecas. Removing from the females the one from Zacatecas, which is exceptionally large in length of wing, tail, and bill, the average of these measurements would be less (wing, 107.4; tail, 58.1). The adult male from Zacatecas, however, is not materially above the average in measurements.

Genus *XENOPICUS* Baird.

*Xenopicus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 83, in text. (Type, by monotypy, *Leuconerpes albolarvatus* Cassin.)

*Xenocraugus*<sup>a</sup> (CABANIS and HEINE, Mus. Hein., iv, heft 2, July, 1863, 74. (Type, *Leuconerpes albolarvatus* Cassin.)

Medium-sized Picinæ (wing about 122–131 mm.), agreeing closely with *Dryobates* in structural characters,<sup>b</sup> but with relatively shorter gonys (decidedly less than twice as long as mandibular rami), and differing conspicuously in coloration, which is uniform black, with head, foreneck, and proximal portion of primaries white (the adult male with a red occipito-nuchal band, as in typical *Dryobates*).

Bill about as long as head, its outlines nearly straight in both lateral and vertical profile, its width at anterior end of nostrils about equal to its depth at same point, its tip distinctly but rather narrowly chisel-shaped; culmen straight or very faintly convex, sharply ridged; gonys nearly one and a half times as long as mandibular rami, nearly straight, rather indistinctly ridged; supranasal ridge and prenasal groove very distinct, running out to edge of maxilla anterior to one-third the distance from tip to base of tomium. Nostril longitudinally elliptical or linear, nearer to tomium than to culmen, covered by a conspicuous antrorse tuft of small, hair-like, prefrontal feathers. Feathers of malar apex and chin antrorse, hair-like. Orbital region partly naked, but eye margined behind and below (except anteriorly) with minute feathers. Wing rather large and pointed, the longest primaries exceeding secondaries by slightly more than one-fourth the length of wing; seventh, or sixth and seventh, primaries longest, the ninth shorter than fourth, the tenth (outermost) about one-third as long as ninth, or slightly less. Tail less than two-thirds as long as wing, the rectrices moderately broad, the middle pair moderately decurved and rather gradually contracted terminally, the subacuminate tip rather short and broad. Tarsus slightly shorter than outer hind toe with claw, decidedly longer than outer front toe with claw.

*Coloration*.—Uniform black, with head, foreneck, and proximal portion of primaries white; adult male with a red occipito-nuchal band.

*Range*.—Pacific coast mountains of North America, from British Columbia to southern California. (Monotypic.)

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<sup>a</sup> "Von ξένος, fremd, sonderbar und κραιώδες, Specht." (Cabanis and Heine.)

<sup>b</sup> There is, apparently, evidence to the effect that the tongue of *Xenopicus* is considerably less extensile than that of *Dryobates*; but the evidence is somewhat conflicting and requires further investigation. (See Ridgway, Orn. Fortieth Parallel, 1877, 548; Proc. U. S. Nat. Mus., iii, 1880, 6, and Merrill, Auk, v, 1888, 254.)



**XENOPICUS ALBOLARVATUS ALBOLARVATUS (Cassin).****WHITE-HEADED WOODPECKER.**

*Adult male*.—Head, all round (except posterior occiput and upper nape, and a postocular streak), together with foreneck, plain white, the nasal tufts more or less tinged with brownish; an occipito-nuchal band of bright poppy red; rest of plumage uniform, slightly glossy, black, duller black on wings, the primaries extensively white on proximal half (more or less) of both webs, this white extending much farther on outer than on inner web; bill slate-blackish; iris brownish red or dull carmine; legs and feet grayish olive or olive-grayish (in life); length (skins), 205–236 (216); wing, 124–131 (127.9); tail, 74–85 (80.9); culmen, 27–30.5 (28.1); depth of bill at base, 7–8 (7.6); tarsus, 21–23 (21.9); outer anterior toe, 13.5–15 (14.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without any red on occiput or nape; length (skins), 190–215 (208); wing, 124–130.5 (126.9); tail, 75.5–90 (82.3); culmen, 24–27 (25.3); depth of bill at base, 6.5–8 (7.1); tarsus, 20–23 (21.2); outer anterior toe, 13.5–14.5 (13.9).<sup>a</sup>

*Young male*.—Similar to the adult male, but the black much duller, especially on underparts, where, as well as on hindneck, the feathers are sometimes indistinctly and narrowly margined at tip with grayish, the hindneck sometimes indistinctly spotted with whitish,

<sup>a</sup> Fourteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Depth of bill at base.	Tarsus.	Outer ante- rior toe.
MALES.						
Five adult males from Oregon.....	129.7	82.7	28.7	7.8	22	14.6
Six adult males from northern California.....	127.5	79.4	28	7.4	21.9	14
Three adult males from western Nevada.....	125.5	79.3	27.5	7.7	21.8	14
One adult male ( <i>X. a. gravirostris</i> ) from Wilsons Peak, San Gabriel Mountains.....	122	-----	29.5	8	23.5	14
Five adult males ( <i>X. a. gravirostris</i> ) from San Ber- nardino Mountains.....	128.4	80.8	29.5	8.5	22.6	14.2
Four adult males ( <i>X. a. gravirostris</i> ) from San Jacinto Mountains.....	127.1	80.8	30.1	8.1	22.2	14.5
FEMALES.						
One adult female from Washington.....	130	90	26.5	6.5	21	14
Two adult females from Oregon.....	129	84.5	25.7	7.5	22.2	14.2
Ten adult females from northern California.....	126.3	81.3	25.3	7.2	20.8	13.8
One adult female from western Nevada.....	126	81	24.5	6.5	21	14
One adult female ( <i>X. a. gravirostris</i> ) from Cuymaca Mountain, San Diego County.....	129.5	86.5	28	8	23	14.5
Seven adult females ( <i>X. a. gravirostris</i> ) from San Ber- nardino Mountains.....	125.6	79.5	27.1	7.9	21.7	14
Two adult females ( <i>X. a. gravirostris</i> ) from San Jacinto Mountains.....	127	80.2	28.2	8.2	21.7	14

and red of head more extended, covering more or less of crown, but more broken, sometimes paler.

*Young female*.—Similar to the young male, but head without any red or with only a few red feathers on median portion of occiput.<sup>a</sup>

Cascade and Sierra Nevada Mountains, from southern British Columbia (Similkameen) southward through Washington, Oregon, and California to Tejón Mountains (Kern County); east to western Idaho (Fort Sherman; Grangeville, near Mount Idaho) and western Nevada (east slope of Sierra Nevada).

*Leuconerpes albolarvatus* CASSIN, Proc. Ac. Nat. Sci. Phila., v, Oct., 1850, 106 (Oregon Canyon, near Georgetown, 12 miles from Sutter's Mill, Eldorado Co., California; coll. Acad. Nat. Sci. Phila.).

[*Leuconerpes*] *albolarvatus* BONAPARTE, Ateneo Italiano, ii, 1854, 125 (Consp. Volucr. Zygod., 1854, 10).

*Melanerpes albolarvatus* CASSIN, Journ. Ac. Nat. Sci. Phila., 2d ser., ii, pt. iii, Jan., 1853, 257, pl. 22.—BAIRD, in Rep. Stansbury's Surv. Gt. Salt Lake, 1853, 333 (California).—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 59 (Sutter's Mill, California).—NEWBERRY, Rep. Pacific R. R. Surv., x, pt. iv, 1859, 91 (Cascade Mts., Oregon).—BRIDGES, Proc. Zool. Soc. Lond., 1858, 3 (Trinity Valley, California).—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 117.

[*Melanerpes*] *albolarvatus* GRAY, Hand-list, ii, 1870, 201, no. 8821.

*Picus* (*Xenopicus*) *albolarvatus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxviii.

*Picus albolarvatus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 96; Cat. N. Am. Birds, 1859, no. 81.—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 160 (Spokane R., Oregon).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 202.—LORD, Proc. Roy. Artil. Inst. Woolwich, iv, 1864, 112 (Ft. Colville, Washington); Intellect. Observer, ix, 1866, 331-333, colored plate.—FEILNER, An. Rep. Smithson. Inst. for 1864 (1865), 425 (bet. Ft. Crook and Shasta Butte, California; habits).—SUNDEVALL, Conspect. Av. Picin., 1866, 29.—COOPER, Orn. Calif., 1870, 382.—COUES, Check List, 1873, no. 295.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 526, pl. 50, figs. 7, 8.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1876, 259 (Tejon Mts., Mt. Whitney, and Walker Basin, California, breeding).—RIDGWAY, Orn. 40th Parallel, 1877, 547 (Sierra Nevada, near Carson City).—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 129 (Blue Mts., Oregon; descr. eggs).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 393, 428 (Calaveras Big Trees, Murphys, Summit Meadows, and Soda Springs, California).—BREWER, Bull. Nutt. Orn. Club, v, 1880, 56 (Placer Co., California; descr. nest and eggs).

[*Picus*] *albolarvatus* COUES, Key N. Am. Birds, 1872, 192.

*Xenopicus albolarvatus* MALHERBE, Mon. Pictid., ii, 1862, 221; iv, 1862, pl. 101, figs. 3, 4.—ELLIOT, New and Unfig. Birds N. Am., i, 1869, pl. [24] and text.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 6, 189; Nom. N. Am. Birds, 1881, no. 366.—COUES, Check List, 2d ed., 1882, no. 442.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 399; 3d

<sup>a</sup> In the series of young birds are three whose sex was determined by the collector as male, that correspond in small amount of red on the head to the young female, as described above, and one marked female which is like normal young males; but I suspect that the determination of sex is erroneous.

ed., 1910, 189.—BENDIRE, Auk, v, 1888, 240 (Ft. Klamath, Oregon, breeding); Life Hist. N. Am. Birds, ii, 1895, 70.—MERRILL (J. C.), Auk, v, 1888, 253 (Ft. Klamath, Oregon, habits); xiv, 1897, 354 (Ft. Sherman, n. Idaho, resident).—BREWSTER, Auk, v, 1888, 253, 254 (remarks on plumages, etc.).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 284.—MERRIAM, North Am. Fauna, no. 5, 1891, 97 (Grangeville, near Mt. Idaho, w. Idaho, breeding; Blue Mts., e. Oregon, breeding).—FANNIN, Check List Birds Brit. Col., 1891, 28 (Cascade Mts.; Similkameen).—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 48 (higher parts of Sierra Nevada).—DAWSON, Auk, xiv, 1897, 174 (Okanogan Co., Washington, breeding at 3,000 ft.).—ANDERSON and GRINNELL, Proc. Ac. Nat. Sci. Phila., 1903, 8 (Siskiyou Mts., n. California; crit.).—RAY, Auk, xx, 1903, 183 (Lake Valley, centr. Sierra Nevada, 6,500 ft.; habits).—JEWETT, Auk, xxvi, 1909, 6 (Baker Co., Oregon, com. res.).—KERMODE, Prov. Mus. Brit. Col., 1909, 49 (Similkameen Valley, e. of Cascade Mts.).—VISHER, Auk, xxvii, 1910, 282 (Santa Catalina Mts., Arizona, 7,000 ft., 1 spec., May 26).—BROOKS, Auk, xxix, 1912, 252 (Similkameen Valley and near Okanogan Landing, Brit. Columbia; 2 specs.).

*X[enopicus] albolarvatus* COUES, Key N. Am. Birds, 2d ed., 1884, 484.—RIDGWAY, Man. N. Am. Birds, 1887, 286.

[*Xenopicus*] *albolarvatus* SHARPE, Hand-list, ii, 1900, 217.

*X[enocraugus] albolarvatus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 74.

[*Xenocraugus*] *albolarvatus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (Forest Hill, California).

*Xenopicus albolarvatus albolarvatus* GRINNELL (J.), Pacific Coast Avifauna, no. 8, Aug. 30, 1912, 14.

### **XENOPICUS ALBOLARVATUS GRAVIROSTRIS (Grinnell).**

#### **GRINNELL'S WOODPECKER.**

Similar to *X. a. albolarvatus*, but bill decidedly larger.

*Adult male*.—Length (skins), 207–230 (220); wing, 122–130 (127.2); tail, 75–84.5 (80.8); culmen, 28–32 (29.7); depth of bill at base, 7.5–9 (8.3); tarsus, 22–23.5 (22.6); outer anterior toe, 14–15 (14.3).<sup>a</sup>

*Adult female*.—Length (skins), 208–215 (214); wing, 124–129.5 (126.3); tail, 77.5–84 (80.3); culmen, 26–29 (27.4); depth of bill at base, 7.5–8 (7.9); tarsus, 21–23 (21.8); outer anterior toe, 13–15 (14).<sup>a</sup>

San Gabriel, San Jacinto, San Bernardino, and Cuymaca Mountains, southern California.

*Xenopicus albolarvatus* (not *Leuconerpes albolarvatus* Cassin) MORCOM, Bull. Ridgw. Orn. Club, no. 2, 1887, 41 (Bear Valley, San Bernardino Co., s. California).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 25 (Los Angeles Co., California; resident in pine belt).

*Xenopicus gravirostris* GRINNELL (J.), Condor, iv, July, 1902, 89 (Camp Chiles, Sierra San Gabriel, Los Angeles Co., California; coll. J. Grinnell).—RAY, Auk, xxiii, 1906, 414 (bet. Ft. Tejon and Lebec, s. California).

*Xenopicus albolarvatus gravirostris* GRINNELL (J.), Auk, xxii, 1905, 383 (Mt. Piños, above 6,500 ft.; crit.); Univ. Calif. Pub. Zool., v, 1908, 62 (San Bernardino Mts., s. California, 6,500–9,000 ft.; crit.).

<sup>a</sup> Ten specimens.



## Genus PHRENOPICUS Bonaparte.

*Phrenopicus* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8). (Type, as fixed by Gray, 1855, *Picus borealis* Vieillot.)

*Pyroupicus* MALHERBE, Mon. Pcid., Introduction, 1861, p. liii. (Type, *Picus borealis* Vieillot.)

*Threnopipo* CABANIS and HEINE, Mus. Hein., iv, heft 2, June 20, 1863, 70. (Type, *Picus borealis* Vieillot.)

Similar to *Dryobates*, but differing in relatively much longer and more pointed wing (longest primaries exceeding secondaries by more than one-third the length of wing, the ninth primary nearly as long as fifth), much smaller tenth (outermost) primary (only one-fourth, instead of one-third, as long as ninth), and relatively much smaller bill (culmen shorter than outer hind toe with claw but prefrontal plumes covering less than basal third of maxilla), the adult male with a longitudinal streak of red on each side of occiput.

Bill shorter than head, rather compressed for anterior half, distinctly but narrowly chisel-shaped at tip, its width at anterior end of nostrils about equal to its depth at same point; culmen straight or very faintly convex, sharply ridged; gonys less than twice as long as mandibular rami, straight, distinctly ridged; supranasal ridge and prenasal groove very distinct, running out to edge of maxilla about one-third the distance from tip to base of tomium. Nostril longitudinally elliptical, nearer to tomium than to culmen, completely covered by the conspicuous antrorse tuft of hair-like, bristle-pointed, prefrontal feathers. Feathers of malar apex and chin antrorse, with slender bristle-like tips. Orbital region mostly feathered, including margin of eyelids. Wing long and pointed, the longest primaries exceeding secondaries by more than one-third the length of wing; sixth, seventh, and eighth primaries longest, the ninth nearly as long as fifth, the tenth (outermost) one-fourth as long as ninth or slightly less. Tail nearly two-thirds as long as wing, the rectrices relatively rather narrow, the middle pair strongly decurved and gradually contracted terminally. Tarsus about as long as culmen, about as long as outer hind toe with claw, the latter decidedly longer than the outer front toe and claw.

*Coloration*.—Above black, the back and wings barred and spotted with white; outer rectrices white spotted or barred with black; auricular and suborbital regions and under parts white, the latter spotted and streaked with black laterally; a black malar stripe; adult male with a narrow concealed streak of red along each side of occiput.

*Range*.—Southeastern United States. (Monotypic.)

## PHRENOPICUS BOREALIS (Vieillot).

## RED COCKADED WOODPECKER.

*Adult male*.—Pileum, hindneck, loreal and rictal regions, and broad malar stripe, extending posteriorly to sides of neck, where wider than anteriorly, glossy blue-black; nasal tufts dull whitish; suborbital and auricular regions white, forming a large patch or area which extends posteriorly onto sides of neck and anteriorly sends a narrow branch to above middle of eye; a streak of bright red (poppy red or scarlet-vermilion), mostly concealed, along each edge of occiput, immediately above the white auricular area; extreme upper back sooty black, usually with concealed spots or streaks of whitish; rest of back, together with scapulars, broadly barred with sooty black and white, the two colors approximately equal in extent; upper rump also barred with black and white, but less regularly or distinctly; lower rump, upper tail-coverts, and four middle rectrices black; two outer normal rectrices white (usually more or less stained), with basal portion of inner web black, the white portion of inner web with three broad bars or transverse spots of dull black, the distal of which reappears on outer web; third normal rectrix with whole, or nearly all, of inner web black, also the basal half, approximately, of outer web, the line of demarkation longitudinally oblique;<sup>a</sup> wings sooty black, the middle and posterior lesser coverts variously spotted with white, the greater coverts with two transverse rows of white spots, the secondaries crossed by four (exposed) narrow bands or broad bars of white; outer webs of primaries (except two outermost) with subquadrate spots of white; inner webs of remiges (except terminal half, more or less, of longer primaries) with large spots of white; underparts white, the sides of chest longitudinally spotted or broadly streaked with deep black, the sides, flanks, and under tail-coverts with smaller spots and streaks of dusky; bill, blackish; iris, brown; legs and feet dusky greenish olive in dried skins.

*Adult female*.—Similar to the adult male, but without any red streak on sides of occiput.

*Young male*.—Essentially like adult female, but a large spot of bright red or orange-red in center of crown, forehead narrowly streaked with white, general "pattern" of coloration less sharply defined, and underparts duller white, with markings dusky or dark sooty brown or brownish black instead of deep black.

*Young female*.—Similar to young male, but without any red on crown.

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<sup>a</sup> Usually there is a more or less distinct dusky spot near tip of outer web, and often the terminal portion of outer web of the fourth normal rectrix has more or less of white edging or spotting.

*Adult male*.—Length (skins), 181–203 (192); wing, 94.5–126 (118.7); tail, 69.5–81 (75.5); culmen, 20–23 (21.4); tarsus, 19–21 (20.2); outer anterior toe, 12.5–14.5 (13.6).<sup>a</sup>

*Adult female*.—Length (skins), 174–203 (192); wing, 114–126 (118.9); tail, 70–81 (75.5); culmen, 19–22 (20.3); tarsus, 19–21 (19.9); outer anterior toe, 12.5–14 (13.3).<sup>b</sup>

Pine forests of Lower Austral Zone of eastern United States, from Florida to eastern Texas (Bowie, Harris, Galveston, Fort Bend, Tyler, Jasper, Marion, and Hardin counties); north to central Virginia (Albemarle County), eastern Tennessee (Morgan, Roane, and Scott counties; Cumberland Plateau), western Kentucky (Fulton County), and south-eastern Missouri (Shannon and Carter counties, breeding); casually to New Jersey (Hoboken) and eastern Pennsylvania (Delaware County).

*Picus borealis* VIEILLOT, Ois. Am. Sept., ii, 1807, 66, pl. 122 ("Dans le nord des États-Unis"); Nouv. Dict. d'Hist. Nat., xxvi, 1818, 69.—STEPHENS, Shaw's Gen. Zool., ix, 1817, 174.—JARDINE, ed. Wilson's Am. Orn., i, 1832, 251, pl. 15, fig. 1.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 96; Cat. N. Am. Birds, 1859, no. 80.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 203.—GRAY, List Birds Brit. Mus., Pictæ, 1868, 50.—ALLEN, Bull. Mus. Comp. Zool.,

<sup>a</sup> Twenty-one specimens.

<sup>b</sup> Seventeen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Ten adult males from Florida.....	114.4	74.4	21.6	20.2	13.3
One adult male from Georgia.....	123	79.5	22	20	14
Two adult males from South Carolina.....	122.5	76.2	20.5	20.2	14
One adult male from Mississippi.....	124.5	78.5	21	20	14.5
One adult male from Louisiana.....	120.5	73	20	20.5	13.5
Two adult males from Tennessee.....	124	75.8	21	19.5	13.5
Four adult males from Texas.....	122	73	20	20.5	13.7
FEMALES.					
Eight adult females from Florida.....	116.4	74.8	20.4	19.9	13.1
One adult female from Georgia.....	120	74	20	19	14
Two adult females from South Carolina.....	122	79.2	20.2	19.5	13
One adult female from North Carolina.....	118.5	76	20	19	12.5
One adult female from Mississippi.....	119	73	20.5	19.5	13.5
One adult female from Tennessee.....	123	72	19	20.5	13.5
Two adult females from Texas.....	119.7	77.7	21.2	20.5	14
One adult female from Indian Territory.....	126	75.5	20	20	13.5

Florida specimens have decidedly shorter wings than those from other localities, but other measurements do not differ, and I can detect no color differences. Comparative measurements are as follows:

*Adult males.*

Ten from Florida: Wing, 94.5–119 (averaging 114.4).

Eleven from other States: Wing, 120.5–126 (averaging 122.6).

*Adult females.*

Eight from Florida: Wing, 114.5–120 (averaging 116.4).

Nine from other States: Wing, 118.5–126 (averaging 121.1).



- ii, 1871, 305 (e. Florida).—COUES, Check List, 1873, no. 296; 2d ed., 1882, no. 433.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 524, pl. 49, fig. 8.—MAYNARD, Birds E. N. Am., 1879, 244, pl. 19.—BROWN (N. C.), Bull. Nutt. Orn. Club, iv, 1879, 11 (Coosada, Alabama; notes).—NEERLING, Bull. Nutt. Orn. Club, vii, 1882, 170 (Harris, Galveston, and Ft. Bend counties, e. Texas).—BEYER, Proc. Louisiana Soc. Nat. for 1897-99 (1900), 102 (Louisiana).
- [*Picus*] *borealis* LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 291 (Hoboken, New Jersey; accidental).—GRAY, Hand-list, ii, 1870, 186, no. 8613.—COUES, Key N. Am. Birds, 1872, 192.
- P[icus]* *borealis* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 371, footnote; Obs. Wilson's Am. Orn., 1826, [31].—COUES, Key N. Am. Birds, 2d ed., 1884, 481.
- T[hranopipo]* *borealis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 70 (Georgia).
- Dryobates borealis* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 395; 3d ed., 1910, 188.—FOX, Auk, iii, 1886, 319 (Roane Co., e. Tennessee).—COOKE, Bird Migr. Miss. Val., 1888, 128 (Newport, Arkansas; Houston, Texas).—SCOTT, Auk, vi, 1889, 251 (Tarpon Springs, Florida).—PINDAR, Auk, vi, 1889, 313 (Fulton Co., Kentucky, rare).—RIVES, Proc. Newport Nat. Hist. Soc., Doc. vii, 1890, 65 (Albemarle Co., Virginia).—STONE, Birds E. Penn. and New Jers., 1894, 94 (Delaware Co. and Philadelphia, Pennsylvania, and Hoboken, New Jersey, accidental).—RHODES, Proc. Ac. Nat. Sci. Phila., 1895, 483 (Cumberland Plateau, Morgan and Scott counties, e. Tennessee).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 61.—WOODRUFF, Auk, xxiv, 1907, 349 (Shannon and Carter counties, Missouri, breeding); xxv, 1908, 200 (Shannon and Carter counties, common).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 23 (food).—WETMORE, Auk, xxix, 1912, 112, in text (Mena, Arkansas, Dec.).
- D[ryobates]* *borealis* RIDGWAY, Man. N. Am. Birds, 1887, 283.
- Dendrocopus borealis* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 251 (Aiken, South Carolina; localities in Florida), 571 (descr. young male).
- [*Dendrocopus*] *borealis* SHARPE, Hand-list, ii, 1900, 215.
- Picus querulus* WILSON, Am. Orn., ii, 1810, 103, pl. 15, fig. 1 (North Carolina, South Carolina, or Georgia; coll. Peale Mus. or Acad. Nat. Sci. Phila.).—BONAPARTE, Ann. Lyc. N. Y. (Synopsis Birds U. S.), 1826, 46.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 577.—AUDUBON, Orn. Biog., v, 1839, 12, pl. 389, figs. 1, 2; Synopsis, 1839, 180; Birds Am., oct. ed., iv, 1842, 254, pl. 264.—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Colorado R., 1853, 89 (Indian Territory; e. Texas).—MALHERBE, Mon. Picid., i, 1861, 134; iii, 1861, pl. 31, figs. 4, 5, 6.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 203.—SUNDEVALL, Consp. Av. Picin., 1866, 21.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 362.
- P[icus]* *querulus* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 370; Obs. Wilson's Am. Orn., 1826, [31].—WAGLER, Syst. Av., 1827, *Picus*, sp. 21; Isis, 1829, 509.—BONAPARTE, Consp. Av., i, 1850, 137.
- [*Threnopicus*] *querulus* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).
- [*Threnopipo*] *querulus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 214 (South Carolina; Georgia).
- P[icus]* *vieillotii* WAGLER, Syst. Av., 1827, *Picus*, sp. 20 (new name for *Picus borealis* Vieillot=adult male).
- P[icus]* *leucotis* Ill[iger] LICHTENSTEIN, Verz. Doubl., 1823, 12 (new name for *P. querulus* Wilson).
- Picus leucotis* BONAPARTE, Geog. and Comp. List, 1838, 39.
- [*Picus*] *leucotis* LICHTENSTEIN, Nom. Mus. Berol., 1854, 75.

## Genus SPHYRAPICUS Baird.

*Pilumnus* (not of Leach, 1816) BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., May, 1854, 8). (Type, *Picus thyroideus* Cassin.)

*Sphyrapicus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 101. (Type, by orig. designation, *Picus varius* Linnæus.)

*Sphyropicus* (emendation) SCLATER, Proc. Zool. Soc. Lond., 1859, 236.—ELLIOT, New and Unfig. Birds N. Am., i, pt. ii, 1866, pl. 25.

*Cladoscopus*<sup>a</sup> (not of Reichenbach, 1851) CABANIS and HEINE, Mus. Hein., iv, heft 2, June, 1863, 50, 80. (New name for *Sphyrapicus*, on grounds of purism.)

*Campoborus* CABANIS and HEINE, Mus. Hein., iv, heft 2, June, 1863, 80. (Type *Picus thyroideus* Cassin.)

Medium-sized Picinæ (wing 118–143 mm.), with outer hind toe longer than outer front toe,<sup>b</sup> gonys nearly to more than three times as long as mandibular rami, supranasal ridge running out to edge of maxilla at or posterior to middle, tarsus longer than outer hind toe with claw, middle rectrices slenderly and abruptly acuminate and slightly (if at all) decurved terminally, and young very different in coloration from adults.

Bill about as long as head or slightly shorter, broad and rather depressed basally, compressed anteriorly, the tip distinctly but rather narrowly chisel-shaped, its width at anterior end of nostrils decidedly greater than its depth at same point; culmen straight or very nearly so, distinctly ridged; gonys nearly to more than three times as long as mandibular rami, straight, or very faintly concave terminally and convex basally, rather distinctly ridged; supranasal ridge and prenasal groove very distinct, running out to tomial edge of maxilla at or slightly posterior to middle. Nostril narrow or linear, obtusely pointed, decidedly nearer to tomium than to culmen, mostly if not wholly covered by a conspicuous antrorse prefrontal tuft of hair-like feathers. Malar apex without a distinct antrorse tuft, but the feathers on extreme anterior portion, likewise those of the margin of chin, directed forward and distinctly bristle-like. Orbits mostly feathered, including margin of eyelids, except anteriorly. Wing long and pointed, the longest primaries exceeding secondaries by one-third the length of wing; seventh and eighth primaries longest, ninth equal to or slightly longer than fifth, tenth (outermost) about one-fourth as long as ninth. Tail less than two-thirds as long as wing, the middle rectrices slightly, if at all, decurved terminally, where abruptly and slenderly acuminate. Tarsus longer than outer hind toe with claw; outer hind toe very slightly longer than outer front toe; tarsi and toes slender, and claws only moderately large. Tongue scarcely extensile and otherwise peculiar; the apo-hyal and cerato-hyal elements of the hyoid not reaching backward much beyond the tympano-maxillary articulation, the basi-hyals short and peculiarly shaped.<sup>c</sup>

<sup>a</sup> "Κλάδος (Zweig) und σκοπέω (spähen)." (Cabanis and Heine.)

<sup>b</sup> The difference in length very slight, however.

<sup>c</sup> See Coues, Proc. Ac. Sci. Phila., 1866, 52.

*Coloration*.—Abdomen immaculate yellow or whitish; upper tail-coverts at least partly white; middle and greater wing-coverts white, or else whole wing (as well as back) barred with black and pale brown or brownish white; chest black or barred with black, or else red (the head and neck also red). Young very different from adults in coloration.

*Range*.—North America in general. (Three or four species.)

KEY TO THE SPECIES AND SUBSPECIES (?) OF SPHYRAPICUS.

- a. Middle wing-coverts and outer web of greater coverts white, forming a conspicuous longitudinal patch on wing.
- b. Sides of throat and lower throat red or white, like rest of throat; back conspicuously variegated with whitish; sides of chest yellowish, red, or brownish.
- c. Chest uniform glossy black (the feathers narrowly margined with whitish or pale yellowish in first winter plumage).
- d. Chin and throat wholly red.

e. Nape whitish; red of throat separated from white subauricular stripe by posterior extension of black malar stripe; back with more white or pale brownish; wing averaging 124.1, tail 72.5. (Eastern North America; south in winter to Cuba, Jamaica, Costa Rica, etc.)

**Sphyrapicus varius varius**, adult male (p. 274).

ee. Nape red; red of throat extending laterally to white subauricular stripe; back with less white; wing averaging 127.5, tail 76.5. (Rocky Mountains to Sierra Nevada and Cascade ranges, south in winter to north-western Mexico.) . . . **Sphyrapicus varius nuchalis**, adult male (p. 279).

dd. Chin and throat at least partly white.

e. Chin and throat wholly white; pileum often uniform glossy black; wing averaging 124.3, tail 71.7.

**Sphyrapicus varius varius**, adult female (p. 275).

ee. Chin white, but at least lower throat (sometimes whole throat) red; pileum always red; wing averaging 128.1, tail 74.4.

**Sphyrapicus varius nuchalis**, adult female (p. 279).

cc. Chest not black.

d. Chest red, like head and neck.

e. Smaller, with red portions of plumage averaging lighter and duller; more white on back; male averaging, wing 123.1, tail 74.6; female, wing 122.8, tail 75.1. (Southern California to eastern Oregon.)

**Sphyrapicus ruber ruber**, adults (p. 282).

ee. Larger, with red portions of plumage averaging darker and brighter; less white on back; male averaging, wing 128.6, tail 78.9; female, wing 130.5, tail 81.5. (Western Oregon to southern Alaska.)

**Sphyrapicus ruber notkensis**, adults (p. 284).

dd. Chest dull grayish brown or brownish gray, more or less distinctly barred or lunulated with darker.

e. Back light yellowish brown, variegated with black; sides of head with a distinct supra-auricular and a conspicuous suborbital and sub-auricular stripe of whitish; throat dull whitish; abdomen distinctly yellowish.

**Sphyrapicus varius varius**, young (p. 275).

ee. Back black or dark sooty, variegated with whitish; sides of head without distinct stripes; throat sooty brown or grayish, nearly concolor with chest.

f. Head and chest without reddish suffusion.

**Sphyrapicus varius nuchalis**, young (p. 279).



*ff.* Head and chest with a reddish suffusion.<sup>a</sup>

***Sphyrapicus ruber*** (and subspecies), young (pp. 282).

*bb.* Sides of throat and lower throat black; sides of chest black.

*c.* Chest, etc., glossy greenish blue-black; throat-stripe red; abdominal area bright yellow. (Western North America, south to northern Mexico in winter.).....***Sphyrapicus thyroideus***, adult male (p. 286).

*cc.* Chest, etc., dull black; throat-stripe whitish; abdominal area pale yellow or yellowish white.....***Sphyrapicus thyroideus***, young male (p. 286).

*aa.* Middle and greater wing-coverts black barred with pale grayish brown or dull brownish white...***Sphyrapicus thyroideus***, adult, and young, female (pp. 286, 287).

### SPHYRAPICUS VARIUS VARIUS (Linnæus).

#### SAPSUCKER.

*Adult male.*—Forehead and crown bright poppy red or crimson, bordered posteriorly by an occipital crescent of glossy blue-black, extending laterally to above middle of eye; nape (at least laterally) white or brownish white, rarely tinged with red; back and scapulars black faintly glossed with greenish blue, broken by heavy spotting of white or brownish white, the white prevailing on sides of back, the black predominating on median portion; rump and upper tail-coverts mostly black laterally, mostly white (usually immaculate) medially; tail black, the inner web of middle pair of rectrices white with several larger or smaller oblique spots or bars of black, the lateral rectrices margined terminally with white (except in abraded plumage); wings black, the exposed portion of middle coverts and outer web of greater coverts (except inner or proximal ones) white, forming a conspicuous longitudinal patch, the outer webs of primaries and distal portion of secondaries with large elongated spots of white, the inner secondaries (tertials) with much white on distal portion; a broad and sharply defined band of white originating at nasal tufts and extending between orbital and malar regions to sides of neck; a narrower postocular stripe of white originating above posterior portion of eye and extending thence to nape; a malar stripe of black, becoming narrower posteriorly, where confluent with a large jugular patch of uniform glossy blue-black, having a strongly convex or rounded posterior outline; chin and throat bright poppy red, the feathers white beneath surface; median under parts and portions adjacent to posterior and lateral edges of the black jugular area, pale yellow (primrose to nearly sulphur yellow); sides and flanks dull white or brownish white (usually more brownish anteriorly), broken by V-shaped markings of blackish; under tail-coverts white, sometimes with a few shaft-streaks or other markings of blackish; bill brownish black or blackish brown; iris brown; legs and feet grayish olive-green or greenish gray (in life).

<sup>a</sup> This character possibly not constant, in which case the young of *S. ruber* and *S. nuchalis* would not always be distinguishable.

*Adult male in autumn and winter.*—Similar to the spring and summer plumage, but the lighter-colored markings of back and scapulars and color of nape light yellowish olive or light buffy yellowish brown instead of white, yellow of under parts deeper, and sides light brownish instead of whitish; bill more brownish.

*Adult female.*—Similar to the adult male, but chin and throat white instead of red, and frequently with red of pileum reduced in extent, often altogether wanting, the whole forehead, crown, and occiput sometimes uniform glossy black, sometimes with small whitish streaks or sagittate spots. (Seasonal variations same as in adult male.)

*Young (sexes alike).*—Wings and tail as in autumnal adults, but otherwise very different; pileum sooty brown or sepia, each feather with a more or less distinct small terminal or subterminal spot of paler; auricular region and malar stripe brownish (instead of black), the former with narrow shaft-streaks of dull whitish; chin and upper throat dull white or pale buffy brownish; lower throat, foreneck, and chest pale brown, broken by crescentic bars or lunules of dusky; otherwise as in autumnal adults but sides and flanks more brownish. (The red of the adult plumage appears in scattered feathers on forehead and crown before any black feathers are acquired on chest or malar region, and also on the throat in the case of young males.)

*Adult male.*—Length (skins), 189–206 (198); wing, 120–130 (124.1); tail, 67–76 (72.5); culmen, 21.5–25.5 (23.4); tarsus, 19–22 (20.3); outer anterior toe, 14–16 (14.7).<sup>a</sup>

*Adult female.*—Length (skins), 182–206 (192); wing, 121–128 (124.3); tail, 68–75 (71.7); culmen, 22–24 (22.7); tarsus, 18.5–20 (19.4); outer anterior toe, 13.5–15.5 (14.4).<sup>a</sup>

Eastern North America, breeding from northern portion of Carolinian life-zone in northern Missouri, northern Indiana, northern Ohio, Massachusetts (mountains of Berkshire County), etc., north to Mackenzie (Fort Providence; Fort Simpson; Fort Smith; Fort Rae; Fort Resolution; Fort Liard; Nehawney Mountains, 100 miles northwest of Fort Simpson; Big Island, Great Slave Lake), central Keewatin, central Quebec, and Cape Breton Island, west to Alberta (Fort McHenry, Athabasca River), and southward on Allegheny Mountains to North Carolina; wintering from Pennsylvania, Ohio Valley, etc., southward (occasionally farther northward); migrating southward over greater part of Mexico, in States of Tamaulipas (Sierra Madre, near Victoria), San Luís Potosí (Soledad), Nuevo León (Rodríguez; Monteréy; Cerro de la Silla), Coahuila (Sierra de Guadalupe), Guanajuato, Hidalgo (Reál del Monte; El Chico),

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<sup>a</sup> Ten specimens.

Mexico (Temiscáltepec; Coapa; Ixtapalapa; Mexicalcingo; Hacienda Eslava; Culhuacán; Coajimalpa; Chimalpa; Tetelco), Jalisco (Volcan de Colima; Zapotlán; La Barca), Colima (Plains of Colima; Colima), Michoacán (Patambán), Morelos (Huitzilác), Guerrero (mountains near Chilpancingo), Oaxaca (La Parada; Llano Verde; Villa Alta; Totóntepec; Toniagua; Santa Efigénia), Vera Cruz (Miradór; Orizaba; Jalapa; Córdoba; Coátepec; Cofre de Perote), Puebla (Atlixco; Huexotitla), Chiapas (Gineta Mountains) and Yucatan (Mérida), and southward through Guatemala (Cobán; Tecpám; Lake Atitlán; Los Amates; Dueñas; San Gerónimo; Tolimán; Volcan de Agua; Volcan de Fuego), Honduras (Siquátepec) and Nicaragua (San Rafael del Norte) to Costa Rica (Coliblanco); also in winter to Bahamas (Andros, Inagua, New Providence, Bimini, Caicos, and Rum Cay islands), Cuba (near Trinidad), Isle of Pines, Little Cayman, Jamaica, St. Croix, St. Andrews and Old Providence islands in Caribbean Sea, and in Bermudas; accidental in southern Greenland (Julianshaab, 1 spec., July, 1845), and casual in eastern Wyoming and eastern Colorado (El Paso County).

[*Picus*] *varius* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 176 (based on *The Yellow-belly'd Woodpecker* Catesby, Nat. Hist. Carolina, i, 21, pl. 21; *Pic varié de la Caroline* Brisson, Orn., iv, 62).—GMELIN, Syst. Nat., i, pt. i, 1788, 438.—LATHAM, Index Orn., i, 1790, 232.—SCLATER, Proc. Zool. Soc. Lond., 1859, 367 (Jalapa, Mexico).—GRAY, Hand-list, ii, 1870, 186, no. 8617.

*Picus varius* VIEILLOT, Ois. Am. Sept., ii, 1807, 63, pls. 118, 119; Nouv. Dict. d'Hist. Nat., xxvi, 1818, 80, 94.—WILSON, Am. Orn., i, 1808, 147, pl. 9, fig. 2.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i (Synop. Birds U. S.), 1826, 45; Geog. and Comp. List, 1838, 39.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 574; 2d ed., 1840, 680.—AUDUBON, Orn. Biog., ii, 1834, 519, pl. 190; v, 1839, 537; Synopsis, 1839, 182; Birds Am., oct. ed., iv, 1842, 263, pl. 267.—D'ORBIGNY, in La Sagra's Hist. Fis., etc., Cuba, Orn., 1839, 108; French ed., p. 141.—GOSSE, Birds Jamaica, 1847, 270.—JARDINE, Contr. Orn., 1848, 83 (Bermuda); 1850, 8 (Bermuda).—LEMBEYE, Aves de la Isla de Cuba, 1850, 131.—REINHARDT, Journ. für Orn., 1854, 430, 440 (Greenland); Ibis, 1861, 8 (Julianshaab, s. Greenland, 1 spec., July, 1845).—CABANIS, Journ. für Orn., 1856, 102 (Cuba).—SCLATER, Proc. Zool. Soc. Lond., 1856, 308 (Córdoba, Vera Cruz); 1858, 305 (La Parada, Oaxaca); 1859, 388 (Llano Verde and Totóntepec, Oaxaca).—MAXIMILIAN, Journ. für Orn., 1858, 417 (descr. tongue).—WILLIS, Ann. Rep. Smithson. Inst., 1859, 287 (Bermuda).—MARTENS, Journ. für Orn., 1859, 215 (Bermuda).—BRYANT, Proc. Bost. Soc. N. H., vii, 1859, 106 (Andros I., Bahamas); 1866, 65 (Bahamas).—TAYLOR, Ibis, 1860, 119 (pine reg. of Siquátepec, Honduras).—NEWTON, Ibis, 1860, 308 (St. Croix).—REINHARDT, Ibis, 1861, 8 (Julianshaab, Greenland, 1 spec., July, 1845).—GUNDLACH, Journ. für Orn., 1861, 415 (Cuba).—ALBRECHT, Journ. für Orn., 1861, 51 (Bahamas); 1862, 202 (Jamaica).—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 284 (Jamaica).—SUNDEVALL, Cons. Av. Picin., 1866, 33.

*P[icus] varius* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1311.—BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 370; Obs. Wilson's Am. Orn., 1826 [30]; Cons. Av., i, 1850, 138.—WAGLER, Syst. Av., 1827, *Picus*,



- sp. 16; Isis, 1829, 509.—GRAY, Gen. Birds, ii, 1846, 435.—MAXIMILIAN, Journ. für Orn., 1858, 417.
- Picus (Dendrocopos) varius* SWAINSON, Fauna Bor.-Am., ii, 1831, pp. xxvi, 309.
- Pitumnus varius* BONAPARTE, Anteneo Italiano, ii, 1854, 123 (Consp. Voluc. Zygod., 1854, 8.)
- Sphyrapicus varius* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxviii, 103.—MALHERBE, Mon. Pic., i, 1862, 157; iv, 1862, pl. 37, figs. 2, 3, 4.—BLAKISTON, Ibis, 1862, 3 (Grand Rapids of and Forks of Saskatchewan).—DRESSER, Ibis, 1865, 468 (San Antonio, Texas, resident, breeding).—COUES, Check List, 1873, no. 302; 2d ed., 1882, no. 446.—TRIPPE, Proc. Bost. Soc. N. H., xv, 1872, 233 (Decatur and Mahaska counties, s. Iowa, breeding).—GUNDLACH, Journ. für Orn., 1874, 150 (Cuba); Orn. Cubana, 1876, 273; ed. 1895, 139.—COUES, Birds Northwest, 1874, 285; Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 616 (Pembina and Souris R., North Dakota, breeding).—BREWSTER, Bull. Nutt. Orn. Club, i, 1876, 63 (biography); iii, 1878, 180 (descr. young); Auk, iii, 1886, 104 (mts. of w. North Carolina, breeding).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 294 (Plains of Colima); Bull. U. S. Nat. Mus., no. 4, 1876, 35 (Santa Efigenia, Oaxaca; Gineta Mts., Chiapas).—MAYNARD, Birds Florida, 1878, 223, pl. 18.—MERRIAM, Bull. Nutt. Orn. Club, iv, 1879, 1 (Lewis Co., New York; habits); Auk, i, 1884, 295 (Point de Monts, Quebec).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 369; Orn. Illinois, i, 1889, 380.—CORY, Birds Bahama Is., 1880, 121 (New Providence I.); Auk, iii, 1886, 375; iv, 1887, 181 (St. Andrews I., Caribbean Sea); viii, 1891, 294 (New Providence I.), 296 (Biminis Islds.), 297 (Caicos Islds.; Inagua); Birds West Ind., 1889, 170; Cat. West Ind. Birds, 1892, 104.—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 212 (Bermudas, April, Nov., Dec.).—BICKNELL, Auk, ii, 1885, 258 (notes).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 402.—ALLEN (J. A.), Bull. Am. Mus. N. H., i, 1886, 247 (Massachusetts, a few breeding).—RALPH and BAGG, Trans. Oneida Hist. Soc., iii, 1886, 123 (Oneida Co., New York, breeding).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 159 (Huexotitla, Puebla).—BENDIRE, Auk, v, 1888, 225 (descr. nest and eggs); Life Hist. N. Am. Birds, ii, 1895, 82.—KEYES and WILLIAMS, Proc. Davenp. Ac. Sci., v, 1888, (20) (Des Moines, Iowa City, etc., breeding).—BERGTOLD, List Birds Buffalo, New York, 1889, 12 (breeding).—SCOTT, Auk, vii, 1890, 310 (Dry Tortugas, Florida); ix, 1892, 374 (Jamaica, Jan.).—CLARK (W. E.), Auk, vii, 1890, 322 (Ft. Churchill).—NORTHROP, Auk, viii, 1891, 75 (Andros I., Bahamas, Feb.).—STONE, Proc. Ac. Nat. Sci. Phila., 1891, 435 (Luzerne Co., Pennsylvania, breeding).—MCBRIDE, Proc. Ind. Ac. Sci., 1891 (1892), 167 (Waterloo, De Kalb Co., n. e. Indiana, breeding).—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 301 (near Trinidad, s. Cuba).—RHODES, Proc. Ac. Nat. Sci. Phila., 1895, 483 (Roan Mt., Tennessee, 4,000 ft.; breeding?).—BAILY, Auk, xiii, 1896, 293 (Elk Co., Pennsylvania, breeding).—JONES, Wilson Bull., no. 16, 1897, 61 (Oberlin, Ohio, breeding).—BUTLER, Birds Indiana, 1897, 834 (Carroll, Laporte, Starke, De Kalb, and Porter counties, n. Indiana, breeding).—COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 83 (El Paso Co., Colorado; 1 spec.).—BONHOTE, Ibis, 1899, 516 (New Providence, Bahamas); 1903, 295 (New Providence, Feb., March).—FAXON and HOFFMAN, Birds Berkshire Co., Mass., 1900, 36 (very rare summer resid.).—PREBLE, North Am. Fauna, no. 22, 1902, 112 (Ft. Churchill; Moose Factory); no. 27, 1908, 384 (north to Great Slave Lake and Ft. Simpson).—EIFRIG, Auk, xxi, 1904, 241 (Allegheny and Garrett counties, w. Maryland, higher parts; breeding?).—MORRIS, Wilson Bull., no. 51, 1905, 56 (habits in winter).—SWALES and TAVERNER, Wilson Bull., no. 55, 1906, 65 (Lake

- Muskoka, Ontario, breeding).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 72 (Tecpam, Lake Atitlan, and Los Amates, Guatemala, 6,000–9,500 ft.).—FLEMING, Auk, xxiv, 1907, 76 (Toronto, Ontario, breeding).—WOODRUFF, Bull. vi, Chicago Ac. Sci., 1907, 110 (Chicago area; transient).—ANDERSON, Proc. Davenp. Ac. Sci., xi, 1907, 275 (Iowa, breeding n. of 42°).—NASH, Vertebr. Fauna Ont., 1908, Birds, p. 50 (summer resid.).—BROOKS (E. A.), Auk, xxv, 1908, 235 (near Pickens, Randolph Co., West Virginia, breeding in spruce belt); xvi, 1909, 84 (Randolph Co., West Virginia, breeding at 4,000 ft.).—STANSILL, Auk, xxvi, 1909, 395 (centr. Alberta, breeding).—FERRY, Pub. 146, Field Mus. N. H., Orn. Ser., i, no. 6, 1910, 266 (Coliblanco, Costa Rica).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 27, pl. 2 (food).
- [*Sphyrapicus*] *varius* GUNDLACH, Journ. für Orn., 1861, 334 (Cuba); Repert. Fisico-Nat. Cuba, i, 1866, 294.—COUES, Key N. Am. Birds, 1872, 195.—CORY, List Birds West Ind., 1885, 20 (Bahamas).
- S[phyrapicus] varius* RIDGWAY, Man. N. Am. Birds, 1887, 288.
- [*Sphyrapicus varius*] WOOD, Wilson Bull., no. 51, 1905, 57 (Wayne Co., Michigan, breeding habits).
- Sphyrapicus varius* SCLATER and SALVIN, Ibis, 1859, 136, 236 (Guatemala).—SCLATER, Cat. Am. Birds, 1862, 335 (Orizaba, Vera Cruz); Proc. Zool. Soc. Lond., 1864, 117 (near City of Mexico).—BLAKISTON, Ibis, 1863, 52 (Saskatchewan).—BRYANT, Proc. Boston Soc. N. H., 1865, 91 (anat. tongue).—LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 205 (Merida, Yucatan).—RIDGWAY, Bull. Essex Inst., v, 1873, 177 (Colorado); Auk, viii, 1891, 338 (Rum Cay, Bahamas, March).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, pl. 51, figs. 1, 2; iii, 1874, 521 (El Paso Co., Colorado; 1 spec.).—NEWTON, Man. N. H. Greenl., 1875, 97 (2 specs.; July, 1845, and 1858).—COUES, Check List, 2d ed., 1882, no. 446.—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 188 (Costa Rica; etc., etc.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, i, 1895, 427.—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 146 (Ceiba, Honduras).—LOWE, Ibis, 1911, 150 (Little Cayman).
- [*Sphyrapicus*] *varius* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 99.—SHARPE, Hand-list, ii, 1900, 212.
- S[phyrapicus] varius* NEWTON (A. and E.), Handb. Jamaica, 1881, 109.—COUES, Key N. Am. Birds, 2d ed., 1884, 486.
- Sphyrapicus varius*, var. *varius* RIDGWAY, Am. Journ. Arts and Sci., v, Jan., 1873, 40.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 539.
- [*Sphyrapicus varius*] a. *varius* COUES, Birds Northwest, 1874, 285.
- Sphyrapicus varius varius* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 343.—BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 206 (Isle of Pines, Cuba, April).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 190.—TODD, Ann. Carnegie Mus., vii, 1911, 421 (New Providence, Great Inagua, and Watling islands, Bahamas).—WORTHINGTON, Ann. Carnegie Mus., vii, 1911, 454 (Bahamas).
- [*Cladoscopus*] *varius* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 80.
- [*Cladoscopus*] *varius* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215.
- Dyctiopicus varius* BOUCARD, Liste Ois. récol. Guat., 1878, 27.
- Picus atrothorax* LESSON, Traité d'Orn., 1831, 229 (locality unknown; = young; see Pucheran Rev. et Mag. de Zool., 2d ser., vii, 1855, 21, 22).
- [*Cladoscopus varius*] var. *atricapilla* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 82 (Cuba; nomen nudum).—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (Cuba).

## SPHYRAPICUS VARIUS NUCHALIS Baird.

## RED-NAPED SAPSUCKER

Similar to *S. v. varius*, but with much less white on back, this forming two definite but broken stripes, converging posteriorly; nape always with more or less of red, under parts less strongly tinged with yellow, and wing and tail averaging decidedly longer; adult male with red of throat more extended, both laterally and posteriorly, covering malar region (except anterior portion), where meeting white sub-auricular stripe; adult female with at least lower half of throat red (sometimes whole throat red, only the chin being white); young much darker above than corresponding stage of *S. v. varius*, the pileum uniform dark sooty slate, white markings on back less brownish, and under parts much less yellowish, the chest and fore-neck brownish gray or grayish brown (instead of buffy brown), and usually less distinctly barred or lunulated with dusky.<sup>a</sup>

*Adult male*.—Length (skins), 179–216 (197); wing, 121–130 (127.5); tail, 67.5–77.5 (76.5); culmen, 21–26 (23.3); tarsus, 19–21.5 (20.4); outer anterior toe, 14.5–16 (15.2).<sup>b</sup>

*Adult female*.—Length (skins), 187–210 (195); wing, 126–132 (128.1); tail, 71–79 (74.4); culmen, 20–24.5 (23); tarsus, 19–20.5 (19.9); outer anterior toe, 14.5–16 (15.1).<sup>c</sup>

Western North America, chiefly east of Cascade and Sierra Nevada ranges; north to central British Columbia (Vernon; Buonaparte);

<sup>a</sup> On account of the conspicuous difference in coloration of the young, definite difference in color pattern of back, head, and neck in adults, and comparative rarity of intermediate specimens (which are far less common, relatively, than in the case of *Colaptes*), I believe that it would be better to consider this form as specifically distinct from *S. varius*. It is true that specimens do occur that are intermediate between *S. nuchalis* and *S. varius*, as well as between the former and *S. ruber*; but they may be (and I believe are) hybrids; certainly there is no more reason for not considering them as such than in the case of *Colaptes*; and if *S. nuchalis* is to be considered as merely a subspecies of *S. varius* then, most certainly, must *S. ruber* also.

<sup>b</sup> Twenty specimens.

<sup>c</sup> Twelve specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Twelve adult males from Rocky Mountain district.....	127.8	78	23.2	20.4	15.1
Eight adult males from California (4), Lower California (1), and British Columbia (3).....	127.1	73	23.6	20.4	15.4
FEMALES.					
Ten adult females from Rocky Mountain district.....	128.3	74.3	22.8	19.9	15.1
Two adult females from Oregon (1) and British Columbia (1)...	127	74.5	24.3	20	15.5



Ducks; Ashcroft) and Alberta; breeding southward to extreme western Texas (Fort Davis), New Mexico (Zuñi Mountains; Hondo Canyon; Culebra Mountain; San Miguel County) and Arizona (Fort Whipple), west to eastern Oregon (Warner Mountains; Blue Mountains) and northeastern California (Hayden Hill, Lassen County), east to Montana (Thompson Pass; St. Marys Lake; Weeksville; Flathead Lake; Columbia Falls; Big Horn Mountains), Wyoming (Bear Lodge; Sherman), western Kansas (near Wallace), etc.; in migration southward over northwestern Mexico, in States of Chihuahua (Colonia Garcia; Colonia Pacheco; Chihuahua City; 30 miles west of Miñaca; Bustillos; Casa Colorado; Refugio; Temasochic; Guerrero), Sonora (Rancheria de los Apaches; El Pinita; El Puerto; Las Cuervas; Río Bavispe), Durango (Cienega de las Vacas), Jalisco (Sierra de Bolaños), Coahuila (Río Sabinas), and Lower California (Laguna; Río San Pedro; Santa Rosarita), casually to Guatemala (Panajachel); sporadically westward during migration to western Washington (mountains near Bellingham Bay), and California west of Sierra Nevada (Alhambra, February; Baird, Shasta County, November; San Gerónimo, Marin County, 3 specimens; Palo Alto, Santa Clara County, February; Los Angeles County, winter; San Clemente Island).

*Picus varius* (not of Linnæus) BAIRD, in Stansbury's Surv. Gt. Salt Lake, 1852, 326 (New Mexico).—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 58 (Ft. Yuma).

*Sphyrapicus varius* (not of Baird) MALHERBE, Mon. Pucid., i, 1861, 161, part.  
(?) *Sphyropicus varius* BROWN, Ibis, 1868, 419 (Vancouver I.).—HOLDEN, Proc. Bost. Soc. N. H., xv, 1872, 207 (Sherman, Wyoming, breeding).

[*Sphyrapicus varius*] Variety *nuchalis* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 103, in text (Mimbres River, New Mexico; coll. Acad. Nat. Sci., Phila.).

*Sphyrapicus nuchalis* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxviii, 921 (descr. specimens from Ft. Bridger and Laramie Peak, Wyoming; Ft. Thorn, New Mexico); ed. 1860 (Birds N. Am.), atlas, pl. 35, figs. 1, 2; Cat. N. Am. Birds, 1859, no. 86.—COOPER, Proc. Calif. Ac. Sci., ii, 1863, 122 (Ft. Mojave).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 204 (crit.).—COUES, Ibis, 1865, 162 (Ft. Whipple, Arizona); Proc. Ac. Nat. Sci. Phila., 1866, 53 (Ft. Whipple, resident; crit.).—RIDGWAY, Field and Forest, i, 1877, 209 (Colorado); Orn. 40th Parallel, 1877, 549 (Carson City, upper Humboldt Valley, and Thousand Spring Valley, Nevada; Parley's Park, Utah).

*Sphyropicus nuchalis* BAIRD, Ibis, 1867, 270.—COOPER, Orn. Calif., 1870, 390 (Ft. Mojave and Ft. Yuma; Rocky Mts., lat. 48°).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 51, figs. 3, 4.—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 129 (Blue Mts., Oregon, breeding; descr. nest).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 569 (Sierra Bolaños, Jalisco; etc.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 429 (localities in Chihuahua; Sierra de Bolaños, Jalisco; Panajachel, Guatemala).

[*Sphyrapicus varius*.] Var. *nuchalis* COUES, Key N. Am. Birds, 1872, 195.

*Sphyropicus varius*, var. *nuchalis* RIDGWAY, Am. Journ. Sci., v, Jan., 1873, 40; Bull. Essex Inst., v, 1873, 173 (Wahsatch Mts., Utah, 7,000–9,000 ft.).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 542.

- Sphyrapicus varius*, . . . var. *nuchalis* COUES, Check List, 1873, no. 302a.
- Sphyrapicus varius*, var. *nuchalis* RIDGWAY, Bull. Essex Inst., v, Nov., 1873, 185 (Colorado).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 158 (South Park, Colorado), 180 (mts. of Colorado, 7,000–12,000 ft.); Proc. Bost. Soc. N. H., xvii, 1874, 63 (Musselshell R., Montana).—HENSHAW, Zool. Exp. W. 100th Merid., 1875, 392 (Gila R. and Mt. Graham, Arizona; Toquerville and Virgin City, Utah; Ft. Garland and Navajo Creek, Colorado).—SCOTT, Bull. Nutt. Orn. Club, iv, 1879, 95 (Twin Lakes, Colorado, breeding).
- S[phyrapicus] varius nuchalis* RIDGWAY, Bull. Essex Inst., vi, Oct., 1874, 174 (Rocky Mts.); Man. N. Am. Birds, 1887, 288.
- Sphyrapicus varius nuchalis* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 22, 24, 34 (localities in Nevada and Utah); Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 369a.—DREW, Bull. Nutt. Orn. Club, vi, 1881, 141 (San Juan Co., Colorado, breeding).—MERRILL, Bull. Nutt. Orn. Club, vi, 1881, 206 (Ft. Shaw and Bighorn Mts., Montana; descr. nest and eggs).—COUES, Check List, 2d ed., 1882, no. 447.—BELDING, Proc. U. S. Nat. Mus., vi, 1883, 349 (Laguna, Lower California).—GOSS, Auk, i, 1884, 100 (s. fork Smoky Hill R., near Wallace, w. Kansas, breeding); Auk, iii, 1886, 114 (near Wallace, w. Kansas).—DREW, Auk, ii, 1885, 17 (Colorado, breeding at 4,000–7,000 ft.).—SCOTT, Auk, iii, 1886, 427 (Santa Catalina Mts., Arizona).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 402a; 3d ed., 1910, 190.—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 205 (Baird, Shasta Co., n. California, 1 spec., Nov. 13).—COOKE, Bird Migr. Miss. Val., 1888, 130 (Ft. Davis, w. Texas; etc.); Bull. Col. Agric. Coll., no. 37, 1897, 83 (Colorado, breeding up to 12,000 ft., but mostly at 8,000–9,000 ft.).—BENDIRE, Auk, v, 1888, 226 (geog. range, habits, etc.); Life Hist. N. Am. Birds, ii, 1895, 88.—MERRIAM, North Am. Fauna, no. 3, 1890, 92 (San Francisco Mt., Arizona, Sept.).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 139 (int. Brit. Columbia).—FANNIN, Check List Birds Brit. Col., 1891, 28 (e. side Cascade range).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 35 (n. e. Sonora and n. w. Chihuahua; crit.).—MAILLIARD, Auk, xv, 1898, 196 (San Geronimo, Marin Co., California, 3 specs.).—MITCHELL, Auk, xv, 1898, 308 (San Miguel Co., New Mexico, breeding at 9,000–12,000 ft.).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 25 (Los Angeles Co., California, winter visitant in foothills); Pacific Coast Avifauna, no. 3, 1902, 38 (California range).—VAN DENBURG, Proc. Calif. Ac. Sci., xxxviii, 1899, 162 (Palo Alto, Santa Clara Co., California, 1 spec., Feb.; crit.).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 12 (Huachuca Mts., Arizona, Feb.–April).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 166 (Cienega de las Vacas, n. w. Durango, March 31).—EDSON, Auk, xxv, 1908, 434 (mts. near Bellingham Bay, Washington, 1 spec.).—ISELY, Auk, xxix, 1912, 35 (Sedgewick Co., Kansas, Dec., Feb.).
- S[phyrapicus] v[arius] nuchalis* COUES, Key N. Am. Birds, 2d ed., 1884, 486.
- [Sphyrapicus varius] b. nuchalis* COUES, Birds Northwest, 1874, 286 (synonymy; Wind R. Mts.; Popoogie Creek; Laramie).
- [Sphyrapicus varius.]* Subsp. *α. Sphyrapicus nuchalis* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 192 (Temosachic, Guerrero, Casa Colorado and Refugio, Chihuahua; Brit. Columbia; etc.).
- C[ladoscopus] nuchalis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 82.
- P[icus] varius occidentalis* SUNDEVALL, Consp. Av. Picin., 1866, 34 (new name for *Sphyrapicus nuchalis* Baird).

## SPHYRAPICUS RUBER RUBER (Gmelin).

## RED-BREASTED SAPSUCKER.

*Adult male in spring and summer.*—Head, neck, and chest, bright red (nearest poppy red) superficially, (the feathers dusky grayish beneath surface); nasal tufts and anterior and lower portion of loreal region dull yellowish white or pale dull buffy, the posterior portion of loreal region (next to eye) black, this sometimes continued, narrowly, along edge of forehead; red of suborbital region lighter than that of malar region, the latter blackish at anterior end; rest of under parts very pale straw yellow or yellowish white, the breast more or less washed or overlaid with bright red, the sides, flanks, and under tail-coverts less yellowish white, broken by mostly V-shaped or hastate markings of dusky grayish; general color of upper parts (except head and neck) black, broken by a double series (converging posteriorly) of white spots down middle of back, a longitudinal white patch on wing-coverts (involving most of middle coverts and outer webs of distal greater coverts) and white spots on outer web of primaries and at tip of proximal secondaries, the inner web and tip of upper tail-coverts also white, and inner web of middle pair of rectrices with oblique, quadrate spots of white; bill brownish black or blackish brown; iris brown; legs and feet grayish; length (skins), 176–208 (194); wing, 118–127.5 (123.1); tail, 71.5–77 (74.6); culmen, 23–25.5 (24.2); tarsus, 20–22 (20.7); outer anterior toe, 14–16 (15.2).<sup>a</sup>

*Adult male in autumn and winter.*—Similar to the adult male in spring and summer, but the red duller, more vinous (sometimes approaching lake red or light burnt carmine), under parts of body more decidedly yellowish, spots on back brownish white or pale brownish, and bill horn brownish instead of nearly black.

*Adult female.*—Similar to the adult male and not always distinguishable, but usually (?) with the breast less strongly washed with red; length (skins), 186–206 (195); wing, 120–125.5 (122.8); tail, 71–79 (75.1); culmen, 22–25 (23.8); tarsus, 19–21 (20.1); outer anterior toe, 14.5–15.5 (15).<sup>a</sup>

*Young (both sexes).*—Wings, tail, and back essentially as in adults; pileum, nape, auricular region, and malar region sooty blackish or dark grayish sooty, the forehead and crown usually tinged, more or less strongly, with dull red, sometimes decidedly dull red (malar region also sometimes dull reddish); suborbital stripe white (sometimes tinged with red); chin, throat, and chest dull grayish (the first two sometimes partly intermixed with dull whitish), usually more or less distinctly barred with darker but sometimes immaculate, often tinged (in part at least) with reddish; sides grayish, usually

<sup>a</sup> Ten specimens.



indistinctly barred with darker, the flanks broadly and rather distinctly barred with dull gray and white; under tail-coverts white, more or less broken by variable markings of dusky grayish; abdomen dull pale yellowish or dull yellowish white.

California; breeding in Transition Zone from northern California to mountains of southern California, east to south-central Oregon (Fort Klamath), and eastern slope of Sierra Nevada; south in winter to northern Lower California (Ensenada; Rosário).

[*Picus*] *ruber* GMELIN, Syst. Nat., i, pt. 1, 1788, 429 (based on *Red breasted Woodpecker* Latham, Syn. i, pt. 2, p. 562, no. 9).—LATHAM, Index Orn., i, 1790, 228.—GRAY, Hand-list, ii, 1870, 186, no. 8616, part.

*Picus ruber* STEPHENS, Shaw's Gen. Zool., ix, 1815, 160.—VIGORS, Zool. Voy. "Blossom," 1839, 23 (Monterey, California).—AUDUBON, Orn. Biog., v, 1839, 179, part, pl. 416, figs. 9, 10; Synopsis, 1839, 181, part; Birds Am., oct. ed., iv, 1842, 261, part, pl. 266.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 681.—HERRMANN, Journ. Ac. Nat. Sci. Phila., 1853, 270 (California); Rep. Pacific R. R. Surv., x, pt. vi, 1859, 57 (mts. of California).—MALHERBE, Mon. Pict., i, 1861, 132, part; iii, 1861, pl. 31, figs. 1, 2.—SUNDEVALL, Consp. Av. Pict., 1866, 32, part (California).—GRAY, List Birds Brit. Mus., Pictæ, 1868, 51.

*P[icus] ruber* WAGLER, Sys. Av., 1827, *Picus*, sp. 15.

*Melanerpes ruber* BONAPARTE, Geog. and Comp. List, 1838, 39, part.—GAMBEL, Journ. Ac. Nat. Sci. Phila., 1847, 56 (California).—SCLATER, Proc. Zool. Soc. Lond., 1857, 127 (San José Valley, California);

*M[elanerpes] ruber* SCLATER, Proc. Zool. Soc. Lond., 1858, 2.

[*Melanerpes*] *ruber* BONAPARTE, Consp. Av., i, 1850, 115, part.

[*Pilumnus*] *ruber* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8), part.

*Sphyrapicus ruber* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxviii, 104, part; Cat. N. Am. Birds, 1859, no. 87, part.—COUES, Check List, 1873, no. 303?, part.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1877, 1319 (e. slope Sierra Nevada).—RIDGWAY, Orn. 40th Parallel, 1877, 549 (w. slope Sierra Nevada).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 403, part.—COOPER, Auk, iv, 1887, 91 (Saticoy, California, Nov.).—BENDIRE, Auk, v, 1888, 229, part (geog. range; habits, etc.); Life Hist. N. Am. Birds, ii, 1895, 92, part.—MERRILL and BREWSTER, Auk, v, 1888, 255 (Ft. Klamath, s. e. Oregon).—BRYANT, Proc. Calif. Ac. Sci., ser. 2, 1889, 286 (Ensenada, Lower California).—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 48 (Tejón Pass, s. California, July; s. Sierra Nevada, Aug., Sept.).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 25 (Los Angeles Co., California, Oct.–March).—MERRIAM, North Am. Fauna, no. 16, 1899, 114 (Mt. Shasta).—VAN DENBURG, Proc. Am. Philos. Soc., xxxviii, 1899, 163 (Los Gatos and Palo Alto, California, Nov., Dec.).—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, Mendocino Co., California; crit.).—THAYER and BANGS, Condor, ix, 1907, 136 (Rosario, Lower California, Nov.).—BEAL, Bull. 34, U. S. Biol. Surv., 1910, 21 (food); Bull. 37, 1911, 31 (food).

[*Sphyrapicus*] *ruber* COUES, Key N. Am. Birds, 1872, 195, part.

*S[phyrapicus] ruber* RIDGWAY, Man. N. Am. Birds, 1887, 289, part.

*Sphyrapicus ruber* XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejón, California).—COOPER, Orn. Cal., 1870, 392, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 51, fig. 6 (California).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 194, part.

- [*Sphyrapicus*] *ruber* SHARPE, Hand-list, ii, 1900, 212, part.
- C[*ladoscopus*] *ruber* CABANIS and HEINE, Mus. Hein., iv, 1863, heft 2, 82 (California).
- [*Cladoscopus*] *ruber* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (California).
- Sphyrapicus ruber ruber* (not of Grinnell, 1909) AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 191.—WILLETT, Pacific Coast Avifauna, no. 7, 1912, 56 (Bear Valley, San Bernardino Mts., breeding).
- Sphyrapicus varius* var. *ruber* RIDGWAY, Am. Journ. Sci., iv, Dec., 1872, 456, footnote, part; v, Jan., 1873, 40, footnote, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 544, part.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1876, 259 (Tejón Mts. and near Kernville, s. California, breeding).
- Sphyrapicus varius ruber* RIDGWAY, Bull. Essex Inst., vi, Oct., 1874, 173, 174 (Sierra Nevada); Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 369b, part.
- Sphyrapicus varius ruber* COUES, Check List, 2d ed., 1882, no. 448, part.—MEARNS, Bull. Nutt. Orn. Club, iv, 1879, 195 (Ft. Klamath, s. e. Oregon).
- S[*phyrapicus*] v[*arius*] *ruber* COUES, Key N. Am. Birds, 2d ed, 1884, 486, part.
- [*Sphyrapicus varius*] c. *ruber* COUES, Birds Northwest, 1874, 286, part (synonymy and range).
- Sphyrapicus varius*,  $\beta$ . *ruber* RIDGWAY, in Belding, Proc. U. S. Nat. Mus., i, March 21, 1879, 429 (Murphys and Big Trees, Calaveras Co., California).
- Sphyrapicus varius daggetti* GRINNELL, Condor, iii, Jan., 1901, 12 (Pasadena, Los Angeles Co., California; coll. F. S. Daggett); Pacific Coast Avifauna, no. 3, 1902, 38 (range); Univ. Calif. Pub. Zool., v, 1908, 63 (San Bernardino Mts., 7,000–8,500 ft.; habits; crit.).—KELLOGG, Condor, xiii, 1911, 119 (Trinity and Shasta counties, California, in summer).
- Sphyrapicus varius nuchalis* (not *S. nuchalis* Baird) LINTON, Condor, x, 1908, 84 (San Clemente I., California, 1 spec., Oct. 11; see Willett, Pacific Coast Avifauna, no. 7, 1912, 56).

### SPHYRAPICUS RUBER NOTKENSIS (Suckow).

#### NORTHERN RED-BREASTED SAPSUCKER.

Similar to *S. r. ruber*, but slightly larger and with coloration darker and brighter; the red of head, neck, and chest averaging brighter, and whitish spots on back usually smaller (sometimes obsolete).

*Adult male*.—Length (skins), 187–217 (203); wing, 123.5–133.5 (128.6); tail, 72–81.5 (78.9); culmen, 24–27 (25.3); tarsus, 20–22 (21.1); outer anterior toe, 15–16.5 (15.7).<sup>a</sup>

*Adult female*.—Length (skins), 196–230 (209); wing, 125.5–133 (130.5); tail, 78.5–85 (81.5); culmen, 23.5–27 (24.9); tarsus, 19.5–21.5 (20.5); outer anterior toe, 15–17 (15.7).<sup>a</sup>

Northwest coast district, breeding from western Oregon (Beaverton; Point Grove; Portland; Washington County); northward through western Washington (Cowlitz; Okanogan County) and British Columbia (including islands) to southern Alaska (Wrangel; Skagway; Kupreanof, Kuiu, Prince of Wales, Etolin, Wrangell, and Admiralty

<sup>a</sup> Ten specimens.

islands; Chilkat River; Chickamin River); occasional southward in winter as far as Monterey, California.

*Picus ruber notkensis* SUCKOW, Anfangsgr. Naturg. Th., ii, i, 1800, 535 (Nootka Sound, Brit. Columbia; based on "Cook's last voy., ii, 297.").

*Sphyrapicus ruber notkensis* RICHMOND, Proc. Biol. Soc. Wash., xv, April 25, 1902, 89 (crit. nomencl.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xix, 1902, 319; Check List, 3d ed., 1910, 191.—BOWLES, Auk, xxiii, 1906, 144 (Puyallup Valley, Washington, resident).—EDSON, Auk, xxv, 1908, 434 (Bellingham Bay, Washington, resident).—KERMODE, Prov. Mus. Brit. Col., 1909, 49 (Vancouver I.; Chilliwack).

*Sphyrapicus ruber nootkensis* BOWLES, Condor, x, 1908, 130 (Puyallup Valley, Washington).

*Picus flaviventris* VIEILLOT, Ois. Am. Sept., ii, 1807, 67 (Nootka Sound); Nouv. Dict. d'Hist. Nat., xxvi, 1818, 95 (Nootka Sound).—STEPHENS, Shaw's Gen. Zool., ix, 1815, 161.

*P[icus] flaviventris* BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1320.

*Sphyrapicus ruber flaviventris* OSGOOD, North Am. Fauna, no. 21, Sept., 1901, 45 (Queen Charlotte islands, Vancouver I., etc.; crit. nomencl.).—RATHBUN, Auk, xix, 1902, 135 (Seattle, Washington, breeding).

*Picus ruber* (not of Gmelin) AUDUBON, Orn. Biog., v, 1839, 179, part, pl. 416, figs. 9, 10; Synopsis, 1839, 181, part; Birds Am., oct. ed., iv, 1842, 261 part, pl. 266.—MALHERBE, Mon. Picid., i, 1861, 132, part; iii, 1861, pl. 31, figs. 1, 2.—SUNDEVALL, Consp. Av. Picin., 1866, 32, part (Nootka Sound).

*Melanerpes ruber* BONAPARTE, Geog. and Comp. List, 1838, 39, part.

[*Melanerpes*] *ruber* BONAPARTE, Consp. Av., i, 1850, 115, part.

[*Pilumnus*] *ruber* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8), part.

*Sphyrapicus ruber* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxviii, 104, part; Cat. N. Am. Birds, 1859, no. 87, part.—COUES, Check List, 1873, no. 303, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 403, part.—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon, resident).—NELSON, Rep. Nat. Hist. Coll., Alaska, 1887, 160 (Chilkat R.).—BENDIRE, Auk, v, 1888, 229, part (geog. range; habits, etc.); Life Hist. N. Am. Birds, ii, 1895, 92, part.—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 139 (coast Brit. Columbia).—FANNIN, Check List Birds Brit. Col., 1891, 28 (e. and w. side of Cascade range).—DAWSON, Auk, xiv, 1897, 175 (Okanogan Co., Washington, 1 spec.).—BISHOP, North Am. Fauna, no. 19, 1900, 78 (Skagway, Alaska).

[*Sphyrapicus*] *ruber* COUES, Key N. Am. Birds, 1872, 195, part.

*S[phyrapicus] ruber* RIDGWAY, Man. N. Am. Birds, 1887, 289, part.

*Sphyropicus ruber* SCLATER, Proc. Zool. Soc. Lond., 1859, 236 (Vancouver I.).—BROWN, Ibis, 1868, 419 (Vancouver I.).—COOPER, Orn. Cal., 1870, 392, part.—HARTLAUB, Journ. für Orn., 1883, 275 (Chilkat R., Alaska).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 194, part ("Behring Straits"; Ft. Rupert and Vancouver I., Brit. Columbia).

[*Sphyropicus*] *ruber* SHARPE, Hand-list, ii, 1900, 212, part.

*Sphyropicus varius* var. *ruber* RIDGWAY, Am. Journ. Sci., iv, Dec., 1872, 456, footnote, part; v, Jan., 1873, 40, footnote, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 544, part.

*Sphyrapicus varius ruber* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 189, part; Nom. N. Am. Birds, 1881, no. 369b, part.—COUES, Check List, 2d ed., 1882, no. 448.—GRINNELL (J.), Condor, iii, 1901, 12 (crit.; range); Pacific Coast Avifauna, no. 3, 1902, 38 (range).—ANDERSON and GRINNELL, Proc. Ac.



Nat. Sci. Phila., 1903, 8 (Siskiyou Mts., n. California; crit.).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 69 (Kupreanof, Kuiu, Prince of Wales, Etolin, and Wrangell islands and Chickamin R., Alaska; crit.); x, 1912, 34 (descr. nest; crit. nomencl.).<sup>a</sup>

*Sphyrapicus varius ruber* COUES, Check List, 2d ed., 1882, no. 448, par<sup>t</sup>

*S[phyrapicus] v[arius] ruber* COUES, Key N. Am. Birds, 2d ed., 1884, 486, part.

*[Sphyrapicus varius] c. ruber* COUES, Birds Northwest, 1874, 286, part (synonymy).

*Sphyrapicus ruber ruber* GRINNELL (J.), Univ. Calif. Pub. Zool., v, 1909, 218 (Admiralty Is., Alaska; crit.).

### SPHYRAPICUS THYROIDEUS (Cassin).

#### WILLIAMSON'S WOODPECKER.

*Adult male*.—Greater part of head and neck, back, scapulars, chest, and sides of breast uniform glossy greenish blue-black; a white postocular or supra-auricular streak, extending to sides of nape, where considerably expanded; a white suborbital and subauricular stripe originating on and involving nasal tufts and extending to beneath end of auricular region; a median stripe of bright poppy red on lower chin and upper throat; abdomen and median portion of breast bright sulphur or canary yellow (sometimes nearly lemon yellow); sides, flanks, and under tail-coverts white, broadly striped and spotted with black, the markings more or less V-shaped on flanks and under tail-coverts; lower rump and upper tail-coverts white, the lateral portions of the former and outer webs of latter largely black; tail black; wings black, the middle coverts and outer webs of greater coverts (except inner or proximal ones) white, forming a very conspicuous large longitudinal patch on wing, the second, or third, to fifth primaries (counting from outermost) usually with a greater or less number of small white spots on outer web; bill black in summer, purplish slaty brown in winter; iris deep reddish brown; legs and feet grayish olive in life; length (skins), 190–220 (208); wing, 131.5–139 (136.8); tail, 70.5–88.5 (83.2); culmen, 23–28 (25.6); tarsus, 20.5–22.5 (21.5); outer anterior toe, 14–15 (14.5).<sup>b</sup>

*Young male*.—Similar in pattern of coloration to the adult male, but the black everywhere much duller (that on back often broken by more or less concealed white spotting or streaking), throat-stripe white instead of red, yellow of abdomen and breast paler, and sides and flanks barred, rather than striped or spotted, with dusky.

*Adult female*.—Very different from either adult or young male. Pileum and hindneck deep drab, the occiput and nape more or less streaked (sometimes also narrowly barred) with black; back and scapulars broadly barred with black and pale drab or, (in worn

<sup>a</sup> Mr. Swarth seems to have made out a good case in favor of restriction of the name *ruber* to the northern form instead of the southern one. Unfortunately it is now too late for me to reopen the question.

<sup>b</sup> Twenty specimens.

summer plumage) dull brownish white, the paler bars usually narrower than the black ones; wings (including coverts) black, barred, more or less broadly, with pale drab or dull brownish white; rump and upper tail-coverts white, spotted or barred with black on lateral portions; tail black, the middle rectrices crossed with oblique bars of white (at least on inner web), the lateral rectrices barred with white on distal portion; sides of head drab, paler (sometimes whitish) on orbital region, the malar region usually streaked or flecked with black; chin and throat plain light drab (nearly écru-drab), rarely with a median streak of red; chest usually barred with black and pale buffy brown or pale écru-drab, with a tendency to more or less of a black patch through coalescence of the black bars on central portion, frequently with a large and well-defined patch of unbroken glossy greenish black, sometimes covering whole throat and fore-neck; sides and flanks regularly barred with black and pale écru-drab or brownish buffy; abdomen and median portion of breast immaculate yellow (primrose to nearly lemon yellow); under tail-coverts white, with V- or U-shaped bars of black; bill, etc., as in adult male; length (skins), 198–222 (209); wing, 132.5–143 (136.2); tail, 78–89 (84.1); culmen, 21.5–28.5 (24.2); tarsus, 20–22.5 (21); outer anterior toe, 14–16 (14.8).<sup>a</sup>

*Young female*.—Similar to the adult female, but bars less sharply defined, chest never(?) with a black patch, yellow of abdominal area paler and duller (often dull yellowish white), and texture of plumage different.

Boreal Mountain forests of western North America; north to southern British Columbia (near Fairview, Osoyos District; Similkameen); breeding southward to southern California (San Jacinto Mountains, Mount Whitney, etc.), southern Arizona (Santa Catalina Mountains) and central New Mexico (Zuñi Mountains; Tres Piedras; Willis; Pecos Baldy; San Miguel County), east to Colorado and Wyoming (Springhill; Laramie Peak); wintering in southern California to western Texas (Concho, Tom Green, and Uvalde counties)

<sup>a</sup> Seventeen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Rocky Mountain district.....	135.7	82.7	24.4	21	14.3
Ten adult males from California (6), Nevada (1), and Oregon (3).	137.9	83.7	26.8	22	14.7
FEMALES.					
Ten adult females from Rocky Mountain district.....	135.9	83.7	22.9	20.9	14.7
Seven adult females from California (4), Nevada (2), and Oregon (1).....	137.1	84.8	25.7	21.1	14.9

and southward through Chihuahua (Colonia Garcia; Rancheria de los Apaches; Piños Altos; Jesús Maria; Casa Colorado; Refugio) and Sonora (Rio Bavispe) to Jalisco (Sierra de Bolaños; Tinguindí near Guadalajara) and northern Durango (Las Bocas).

*Picus thyroideus* CASSIN, Proc. Ac. Nat. Sci. Phila., v, Dec., 1851, 349 (California; coll. Ac. Nat. Sci. Phila.).—HEERMANN, Journ. Ac. Nat. Sci. Phila., 2d ser., ii, 1853, 270; Rep. Pacific R. R. Surv., x, pt. iv, 1859, 58 ("southern mines of California").—SUNDEVALL, Consp. Av. Picin., 1866, 32.—GRAY, List Birds Brit. Mus., Capit. and Pictid., 1868, 52.

[*Picus*] *thyroideus* GRAY, Hand-list, ii, 1870, 186, no. 8618.

[*Pilumnus*] *thyroideus* BONAPARTE, Ateneo Italiano, ii, 1854, 123 (Consp. Voluc. Zygod., 1854, 8).

*C[olaptes] thyroideus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 416.

*Melanerpes thyroideus* CASSIN, Illustr. Birds Calif. Tex., etc., 1856, 201, pl. 32.—SCLATER, Proc. Zool. Soc. Lond., 1858, 2.

*Sphyrapicus thyroideus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxviii, 106. Cat. N. Am. Birds, 1859, no. 88.—MALHERBE, Mon. Pictid., i, 1861, 162; iii, 1861, pl. 37, fig. 1.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 204.—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 54 (Ft. Whipple; crit.); Check List, 1873, no. 304; 2d ed., 1882, no. 449; Birds Northwest, 1874, 288.—ELLIOT, New and Unfig. N. Am. Birds, i, 1869, pl. 25.—HENSEHAW, Am. Nat., viii, 1874, 242 (proves identity of *S. thyroideus* and "*S. williamsonii*"); Rep. Orn. Spec. Wheeler's Surv., 1874, 90 (mts. near Ft. Garland, Colorado; crit.); 1876, 259 (Mt. Whitney, California); Zool. Exp. W. 100th Merid., 1875, 394 (Rio Branco and mts. near Ft. Garland, Colorado; Gila R., New Mexico; Mt. Graham, Arizona); Ann. Lyc. N. Y., xi, 1874, 9 (Utah, in pine zone).—GRINNELL (G. B.) in Ludlow's Rep. Recon., 1876, 81 (Tower Creek, Yellowstone Park).—RIDGWAY, Orn. 40th Parallel, 1877, 551 (Sierra Nevada, near Carson City; Parley's Park, Utah); Proc. U. S. Nat. Mus., iii, 1880, 189; Nom. N. Am. Birds, 1881, no. 370; Auk, iv, 1887, 75 (Blue Canyon, California; descr. adult male with red crown).—SCOTT, Bull. Nutt. Orn. Club, iv, 1879, 95 (Twin Lakes, Colorado, breeding); Auk, iii, 1886, 427 (Santa Catalina Mts., Arizona).—DREW, Auk, ii, 1885, 17 (Colorado, breeding at 5,000–10,000 ft.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 404; 3d ed., 1910, 191.—LLOYD, Auk, iv, 1887, 191 (North Concho and Nueces Canyon, Uvalde Co., w. Texas, in winter).—COOKE, Bird Migr. Miss. Val., 1888, 130 (Concho, Tom Green and Uvalde counties, w. Texas); Bull. Col. Agric. Coll., no. 37, 1897, 84 (Colorado, breeding at 5,000–10,000 ft.).—BENDIRE, Auk, v, 1888, 235 (range; breeding habits; descr. nest and eggs); Life Hist. N. Am. Birds, ii, 1895, 97.—MERRILL (J. C.), Auk, v, 1888, 255 (Ft. Klamath, e. Oregon, resident).—MERRIAM, North Am. Fauna, no. 3, 1890, 92 (San Francisco Mt., Arizona).—MEARNS, Auk, vii, 1890, 252 (mts. of Arizona; habits, plumages, etc.).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 35 (Bavispe R., n. e. Sonora, Dec.; Rancheria de los Apaches, n. w. Chihuahua, Jan.; crit.).—MITCHELL, Auk, xv, 1898, 308 (San Miguel Co., New Mexico, breeding at 7,000–11,000 ft.).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 25 (Los Angeles Co., California, winter, in pine belt).—ANDERSON and GRINNELL, Proc. Ac. Nat. Sci. Phila., 1903, 8 (Siskiyou Mts., n. California; crit.).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 166 (Los Bocas, n. w. Durango, Feb.).—BROOKS, Auk, xxvi, 1909, 61 (near Fairview, Osoyoos District, Brit. Columbia, 1 spec.).—KERMODE, Provincial Mus. Brit. Col., 1909, 50 (Similkameen, Brit. Columbia).—VISHER, Auk, xxvii, 1910, 282 (Santa Catalina Mts., Arizona, breeding in oak belt).—BEAL, Bull. 37, U. S. Biol. Surv., 1911, 32 (food).—LACEY, Auk, xxviii, 1911, 209 (Kerrville, Texas, Oct. 24, 1898).



- [*Sphyrapicus*] *thyroideus* COUES, Key N. Am. Birds, 1872, 195.  
*S[phyrapicus] thyroideus* COUES, Ibis, 1865, 162 (Ft. Whipple, Arizona).—RIDGWAY, Man. N. Am. Birds, 1887, 289.  
*Sphyrapicus thyroideus* COOPER, Orn. Calif. 1870, 394.—MERRIAM, Sixth An. Rep. U. S. Geol. Surv. Terr., 1873, 694 (Madison R., Montana).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 547, pl. 56, fig. 6.—BELDING, Proc. U. S. Nat. Mus., i, 1878, 429 (Placer and Calaveras counties, California).—SCOTT, Auk, ii, 1885, 174 (Santa Catalina Mts., Arizona).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 196 (Piños Altos, Jesus Maria, Casa Colorado, and Refugio, Chihuahua, etc.), 569 (Sierra Bolaños, Jalisco).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 430 (Sierra de Bolaños and Tingundi, near Guadalajara, Jalisco; etc.).  
*S[phyrapicus] thyroideus* COUES, Key N. Am. Birds, 2d ed., 1884, 486.  
*[Sphyrapicus] thyroideus* SHARPE, Hand-list, ii, 1900, 212.  
*Campoborus thyroideus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 80.  
*C[ladoscopus] thyroideus* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 84.  
*[Cladoscopus] thyroideus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 215 (Forest Hill, California).  
*Picus nataliæ* MALHERBE, Journ. für Orn., 1854, 171 (Mexico; Darmstadt Mus.).  
*C[enturus] nataliæ* REICHENBACH, Handb. Scansores, Picinæ, 1854, 411.  
*Picus williamsonii* NEWBERRY, Rep. Pacific R. R. Surv., vi, 1857, 89 (nomen nudum), pl. 34, upper fig. (Upper Klamath Lake, Oregon; coll. U. S. Nat. Mus.;=adult male with red color of throat destroyed by alcohol).  
*Picus williamsoni* SUNDEVALL, Conspect. Av. Picin., 1866, 32.  
*Sphyrapicus williamsonii* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxviii, 105 (Upper Klamath Lake, Oregon; Laramie Peak, Wyoming); ed. 1860 (Birds N. Am.), atlas, pl. 34, fig. 1; Cat. N. Am. Birds, 1859, no. 89.—COUES, Check List, 1873, no. 305.  
*Sphyrapicus williamsoni* MALHERBE, Mon. Picid., i, 1861, 163; iii, 1861, pl. 36, fig. 4.—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 54 (Ft. Whipple, Arizona, resident).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 158 (South Park, Colorado).  
*S[phyrapicus] williamsoni* COUES, Ibis, 1865, 162, in text (Ft. Whipple).  
*Sphyrapicus williamsonii* COOPER, Orn. Calif., 1870, 393.—MERRIAM, Sixth An. Rep. U. S. Geol. Surv. Terr., 1873, 694 (headwaters Madison R., Wyoming).  
*Sphyrapicus williamsoni* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 545, pl. 51, fig. 5.  
*C[ladoscopus] williamsoni* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 82.  
*Melanerpes williamsoni* GRAY, List Birds Brit. Mus., Capit. and Picidæ, 1868, 116.  
*[Melanerpes] williamsoni* GRAY, Hand-list, ii, 1870, 201, no. 8820.  
*Melanerpes rubrigularis* SCLATER, Proc. Zool. Soc. Lond., 1858, 2, pl. 131 (Trinity Valley, n. California; coll. P. L. Sclater;=adult male); Ann. and Mag. N. H., 3d ser., i, 1858, 127.

### Genus *PICOIDES* Lacépède.

- Picoides* LACÉPÈDE, Tableau Ois., 1799, 9. (Type, as designated by Gray, 1840, *Picus tridactylus* Linnæus.)  
*Tridactylia* STEPHENS, in Shaw's Gen. Zool., ix, 1815, 218. (Type, *T. hirsuta* Stephens=*Picus tridactylus* Linnæus.)  
*Apternus* SWAINSON, Fauna Bor.-Am., ii, 1831, 302. (Type, *Picus (Apternus) arcticus* SWAINSON.)  
*Pipodes* GLOGER, Handb. Naturg., 1842, 198. (Type, *Picus tridactylus* Linnæus.)  
*Dryocolaptes* GISTEL, Naturg. des Thierreichs für höhere Schulen, 1848, 86. (Type, *Picus tridactylus* Linnæus.)

Medium-sized Picinæ (wing 109–134 mm.), with only one hind toe (the outer, the hallux being absent) and excessively depressed bill, the coloration much as in species of *Dryobates*, but adult male with a yellow crown-patch instead of red occipital or nuchal area.

Bill about as long as head, extremely depressed, its width at anterior end of nostrils much greater than its depth at same point, regularly wedge-shaped in vertical profile, the tip distinctly though narrowly chisel-shaped; culmen straight, sharply ridged; gonys nearly to quite two and a half times as long as mandibular rami, straight, distinctly ridged; supranasal ridge and prenasal groove very distinct, about twice as far removed from culmen as from tomium, running out to the latter at a point a little posterior to the middle. Nostril longitudinally, narrowly cuneate (pointed anteriorly), much overhung by the projecting edge of the supranasal ridge, completely covered by the large antrorse prefrontal tuft of hair-like feathers. Feathers of malar apex and chin antrorse and hair-like, the latter softer and covering base of gonys. Orbital region entirely feathered above and behind eye, partly naked in front and below. Wing moderate, the longest primaries exceeding secondaries by a little more than one-third the length of wing; fifth, sixth, and seventh, or sixth, seventh, and eighth, primaries longest, the ninth equal to third or intermediate between third and fourth, the tenth (outermost) about one-third as long as ninth. Tail two-thirds as long as wing or slightly less, the middle rectrices slightly decurved and gradually contracted terminally. Tarsus decidedly longer than hind toe with claw, the latter slightly but decidedly longer than outer front toe with claw, the inner front toe nearly as long as the outer.

*Coloration*.—Above black, the primaries spotted with white, the back sometimes barred or striped with white; sides of head black, with a white stripe from lores beneath orbital and auricular regions (sometimes with a white supra-auricular stripe also); under parts white, barred or spotted laterally with black; lateral rectrices white, with or without black spots or bars; adult males with a yellow patch on crown.

*Range*.—Subarctic and cold-temperate portions of northern hemisphere, south, in high mountains, to New Mexico, Arizona, and China. (About eight species and subspecies.)

KEY TO THE SPECIES AND SUBSPECIES OF *PICOIDES*.

a. Back barred or otherwise marked with white. (*Picoides americanus*.)

b. Rump and upper tail-coverts without white spots or bars, or else with few and small ones; back mostly black, the median portion barred or spotted with white; sides and flanks more heavily barred with black; forehead with black prevailing; white supra-auricular stripe usually obsolete. (Canadian and Hudsonian zones, from Ungava, Labrador, Newfoundland, Maine, northern New York, etc., to Montana, Alberta, and southern Mackenzie.)

*Picoides americanus americanus* (p. 291).

- bb.* Rump (sometimes upper tail-coverts also) barred or spotted with white; back mostly white, this with usually a longitudinal instead of transverse disposition; sides and flanks less heavily barred; forehead with whitish prevailing, or at least conspicuously spotted with white; white supra-auricular streak distinct, usually conspicuous.
- c.* Smaller (wing averaging 116.8 in adult male, 113 in adult female); white of back more or less broken by black bars; white spots on inner web of innermost secondaries smaller. (Hudsonian zone of Alaska and Mackenzie and southward over Hudsonian highlands of British Columbia and western Alberta.)..... **Picoides americanus fasciatus** (p. 295).
- cc.* Larger (wing averaging 123.3 in adult male, 121.5 in adult female); white of back continuous, not broken (or very rarely and to slight extent) by black bars; white spots on inner web of innermost secondaries larger. (High coniferous forests of Rocky Mountains, from southern Idaho and Montana to New Mexico and Arizona.)..... **Picoides americanus dorsalis** (p. 297).
- aa.* Back wholly black. (Northern New England, northern New York, northern Michigan, and northern Minnesota to southern Ungava, central Keewatin, southern Mackenzie, central Yukon, and southern Alaska, west, through higher mountains of western South Dakota, Wyoming, Idaho, and Nevada, to the Sierra Nevada and Cascade ranges.)..... **Picoides arcticus** (p. 298).

**PICOIDES AMERICANUS AMERICANUS** Brehm.

**THREE-TOED WOODPECKER.**

*Adult male.*—Crown yellow (light wax yellow or dull light gamboge to saffron); forehead black, more or less spotted with dull white, especially on posterior portion (next to yellow of crown); rest of pileum, together with loreal, orbital, and auricular regions and hindneck, uniform glossy blue-black, sometimes with an indication of a narrow postocular or supra-auricular streak of white, often with whitish spots or streaks on occiput (next to yellow of crown); rest of upper parts dull black or sooty black, the lower hindneck with more or less of white (sometimes forming a rather distinct but broken collar), back and upper rump barred or transversely spotted, along median portion, with white, the outer webs of remiges also spotted with white, except proximal secondaries, the innermost of which have white spots along edge of inner web; two lateral normal rectrices, on each side, with distal half or more white, the third extensively white terminally, this white more or less stained with brownish, especially on distal portion; nasal tufts light grayish brown, finely streaked with black, this sometimes predominating on lower or terminal portion; a more or less distinct rictal streak or narrow stripe of white, passing beneath orbital and auricular regions; beneath this a more or less broad malar stripe of glossy black or blue-black, usually more or less broken by white tips to the feathers; under parts white, the sides and flanks broadly barred with black, the anterior portion of sides (sides of breast) with bars more irregular, sometimes broken into spots and streaks; bill grayish horn color, the mandible paler (pale yellowish gray); feet dark grayish horn color (in dried skins);



length (skins), 190–220 (202); wing, 110–118.5 (115); tail, 68.5–82.5 (74.5); culmen, 24–28 (26.7); tarsus, 20–21.5 (20.6); outer anterior toe, 9.5–12 (10.5).<sup>a</sup>

*Adult female*.—Similar to the adult male but without any yellow on head, the entire pileum glossy blue-black, usually more or less streaked or spotted with grayish white on forehead and crown, but sometimes immaculate; length (skins), 181–199 (190); wing, 109–116 (111.9); tail, 69.5–77 (72.9); culmen, 22.5–26.5 (24.4); tarsus, 19–20 (19.7); outer anterior toe, 9.5–10.5 (10).<sup>b</sup>

Canadian Zone and part of Hudsonian Zone of North America, chiefly east of Rocky Mountains; north to Labrador (Okak; Lance au Loup; Black Bay; Maklovik River; Hopedale), northern Ungava (Fort Chimo; Forks; Davis Inlet), Keewatin (Severn River; Fort Churchill), and southern Mackenzie (Fort Simpson; Fort Franklin; Fort Anderson; Great Bear Lake); west to Alberta (Smoky Trail; 15 miles west and 15 miles south of Henry House), British Columbia (Ashmola River, September 30), and eastern Idaho (west slope Bitterroot Mountains, September;<sup>c</sup> breeding southward to Anticosti Island,

<sup>a</sup> Twenty-one specimens.

<sup>b</sup> Eighteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Maine (6), New Brunswick (1), and New York (3).....	113.8	73.1	26.9	20.7	10.6
Two adult males from Newfoundland.....	116.8	73.8	26.8	20.8	11.3
Nine adult males from Quebec (1), Labrador (6), and Ungava (2).....	116	76.1	26.4	20.4	9.2
Ten adult males ( <i>P. a. fasciatus</i> ) from Mackenzie.....	116.8	74.2	27	19.9	10.4
Twenty adult males ( <i>P. a. fasciatus</i> ) from Alaska (18) and Yukon Territory (2).....	116.8	73.4	27.1	20.3	10.5
Ten adult males ( <i>P. a. dorsalis</i> ) from Rocky Mountains of United States.....	123.3	75.2	28.9	20.9	10.8
FEMALES.					
Ten adult females from New York (1), Maine (5), and New Brunswick (4).....	111.6	72.4	24.4	19.7	9.9
Eight adult females from Labrador (4) and Ungava (4).....	112.1	73.5	24.3	19.7	10
Ten adult females ( <i>P. a. fasciatus</i> ) from Mackenzie (9) and Athabasca (1).....	113.1	72.8	23.6	19	9.7
Thirteen adult females ( <i>P. a. fasciatus</i> ) from Alaska.....	113	73.6	24.1	19.6	10.1
Ten adult females ( <i>P. a. dorsalis</i> ) from Rocky Mountains of United States.....	121.5	76.1	26.5	20.6	10.6

<sup>c</sup> The occurrence in far western localities, well within the range of *P. a. fasciatus*, of perfectly typical examples of *P. a. americanus*, is very puzzling. Except those found in southern Mackenzie, however, such specimens are all fall or winter birds, and may be migrants. The specimen from the Bitterroot Mountains is even an extreme example of *P. a. americanus*.

northern New York (Herkimer, Lewis, and Hamilton counties), northern Ontario, etc.; sporadically or irregularly southward in winter to Massachusetts, southern Ontario, northern Michigan, northern Wisconsin, northern Minnesota, etc.

[*Picus*] *tridactylus* (not of Linnæus) FORSTER, Philos. Trans., lxii, 1772, 388 (Severn R., Keewatin).

*Picus tridactylus* BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 46, 437 (descr. plumages); Synop. Birds U. S., 1828, 46.—SWAINSON, Fauna Bor.-Am., ii, 1831, pl. 56 (sources of Athabasca R.).—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 578.—AUDUBON, Orn. Biog., ii, 1834, 197, pl. 132; v, 1839, 538.

*Picus (Apternus) tridactylus* SWAINSON, Fauna Bor.-Am., ii, 1831, 311 (sources of Athabasca R.).—NUTTALL, Man. Orn. U. S. and Can., Water Birds, 1834, 602.

(?) *Picus undulatus* VIEILLOT, Ois. Am. Sept., ii, 1807, 69 (based on *Picus varius cayanensis* Brisson, Orn., iv, 54; *Pic tacheté de Cayenne* Daubenton, Pl. Enl., pl. 553).—BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1319.

*Tridactylia undulata* STEPHENS, Shaw's Gen. Zool., ix, 1815, 220.

[*Tridactylia*] *undulata* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 28 (n. North America; Labrador).

(?) *Picus undosus* CUVIER, Règne Anim., 2d ed., i, 1829, 451 (same basis as *P. undulatus* Vieillot).

(?) *Picus undatus* TEMMINCK, Tabl. Méth., 1835-39, 63 (same basis as *P. undulatus* Vieillot).

*Picoides variegatus* VALENCIENNES, Dict. Sci. Nat., xl, 1826, 191, part.

*Picus hirsutus* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxvi, 1818, 103, part (Hudson Bay; cites Ois. Am. Sept.).—WAGLER, Syst. Av., 1827, *Picus*, sp. 132.—AUDUBON, Orn. Biog., v, 1839, 184; Synopsis, 1839, 183; Birds Am., oct. ed., iv, 1842, 268, pl. 269.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, ed. 2, 1840, 622.

*Apternus hirsutus* BONAPARTE, Geog. and Comp. List, 1838, 39.

[*Apternus*] *hirsutus* BONAPARTE, Consp. Av., i, 1850, 139; Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).

[*Apternus*] *hirsutus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 361, pl. 630, figs. 4192, 4193.

[*Picoides*] *hirsutus* GRAY, Gen. Birds, ii, 1845, 434.

*Picoides hirsutus* MALHERBE, Mém. Acad. Metz, xxx, 1849, 329.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 98; Cat. N. Am. Birds, 1859, no. 83.—(?) BLAKISTON, Ibis, 1863, 52 (n. w. Canada).—MAYNARD, Birds e. N. Am., 1879, 247.

*Picus hirsutus* AUDUBON, Orn. Biog., v, 1839, pl. 417, figs. 3, 4.

*Picoides americanus* BREHM, Handb. Vögel Deutschl., 1831, 195 ("Amerika").—MALHERBE, Mon. Pict., i, 1861, 176; iii, 1861, pl. 39, figs. 1, 2.—SCLATER, Cat. Am. Birds, 1862, 335.—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 30.—COUES, Check List, 1873, no. 301; 2d ed., 1882, no. 444.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 50, fig. 2.—MERIAM, Bull. Nutt. Orn. Club, iii, 1878, 200 (Lewis Co., New York, breeding; descr. nest and eggs); iv, 1879, 6 (Lewis Co., resident).—BREWSTER, Proc. Bost. Soc. N. H., xxii, 1883, 381 (Ellis Bay, Anticosti I., breeding).—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 242 (Labrador).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 401.—ALLEN, Bull. Am. Mus. N. H., i, 1886, 247 (Massachusetts records; accidental

- in winter).—RALPH and BAGG, Trans. Oneida Hist. Soc., iii, 1886, 123 (Herkimer and Hamilton counties, New York, rare resident).—CHADBOURNE, Auk, iv, 1887, 104 (White Mts., New Hampshire, 3960 ft.).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 550 (n. e. Manitoba).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 279 (Big Moose Lake, Moose R., Hamilton Co., and Herkimer Co., New York; etc.).—COOK, Bull. 54, Mich. Agric. Exp. Sta., 1893, 88 (n. peninsula and Gogebic district, Michigan, visitant).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 77.—MORRELL, Auk, xvi, 1899, 251 (Nova Scotia, March).—(?)ROBBINS, Auk, xvii, 1900, 173 (Beverly, Massachusetts, Jan. 21, 1899<sup>a</sup>).—NORTON, Proc. Portland Soc. N. H., ii, 1901, 153 (Northwest R., Labrador; descr. young).—FLEMING, Auk, xviii, 1901, 39 (Parry Sound and Muskoka, n. Ontario, winter); xix, 1902, 79 (Toronto, Ontario, Nov. 16, 1901).—PREBLE, North Am. Fauna, no. 22, 1902, 112 (Severn R., Ft. Churchill, etc., Keewatin).—TOWNSEND and ALLEN, Proc. Bost. Soc. N. H., xxxiii, 1907, 377 (Labrador).—ROBERTS, in Wilcox's Hist. Becker Co., Minn., 1907, 176 (Lake Itasca, breeding in 1902).—NASH, Vertebr. Ontario, 1908, Birds, p. 50 (resident in northern, rare winter visitant in southern, Ontario).—(?)SWARTH, Condor, xiii, 1911, 211 (Admiralty Islands, s. Alaska, resident).
- [*Picoides*] *americanus* GRAY, Hand-list, ii, 1870, 181, no. 8537.—COUES, Key N. Am. Birds, 1872, 194, part.—SHARPE, Hand-list, ii, 1900, 217, part.
- P*[*icoides*] *americanus* BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 122 (unusual influx into e. Massachusetts, winter of 1860-61).—COUES, Key N. Am. Birds, 2d ed., 1884, 485, part.—RIDGWAY, Man. N. Am. Birds, 1887, 287, part.
- Apternus americanus* SWAINSON, Classif. Birds, ii, 1837, 306.
- Picus americanus* SUNDEVALL, Consp. Av. Picin., 1866, 15.
- Picoides tridactylus*, var. *americanus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 532, part.
- Picoides americanus* . . . *a. americanus* COUES, Birds Northwest, 1874, 284.
- Picoides americanus americanus* BANGS, Auk, xvii, April, 1900, 132, part (crit.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 194.—(?)SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 69 (Freshwater Bay, Chichagoff Island, Alaska; crit.).—SAUNDERS, Auk, xxviii, 1911, 37 (Bear Canyon, Gallatin Co., Montana); Condor, xiv, 1912, 26 (Pipestone Creek, Jefferson Co., Montana, Oct. 6, 1909).
- Picoides tridactylus americanus* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 6, 189; Nom. N. Am. Birds, 1881, no. 368.—MERRIAM, Bull. Nutt. Orn. Club, vi, 1881, 232 (Adirondack region, New York, resident); Auk, i, 1884, 295 (Point de Monts, Quebec).
- [*Tridactylia*] *americana* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 213 (Canada; Labrador).
- Picus arcticus* (not of Swainson) DEKAY, Zool. New York, 1844, 190, pl. 17, fig. 36.
- [*Picoides americanus*.] Var. *fasciatus* BAIRD, in Cooper's Orn. Calif., 1870, 385, part.
- Picoides americanus fasciatus* (not of Chapman, 1902) PREBLE, North Am. Fauna, no. 27, 1908, 382, part (Ft. Anderson, Mackenzie; some specimens from Ft. Simpson; crit., etc.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 190, part.

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<sup>a</sup> The vernacular name "Arctic Three-toed Woodpecker" being coupled with the technical name *Picoides americanus*, it is uncertain whether this species or *P. arcticus* is meant.



*Picoides americanus bacatus* BANGS, Auk, xvii, April, 1900, 136 (Bangor, Maine; coll. E. A. and O. Bangs).

*Picoides bacatus* HOWE, Contr. Am. Orn., ii, 1902, 15 (Pico Peak, Vermont, breeding above 2,500 ft.).

[*Picoides*] *baccatus* SHARPE, Hand-list, ii, 1900, 217.

*Picoides americanus labradorius* BANGS, Auk, xvii, April, 1900, 138 (Okak, Labrador; coll. J. D. Sornborger).

[*Picoides*] *labradorius* SHARPE, Hand-list, ii, 1900, 217.

### PICOIDES AMERICANUS FASCIATUS Baird.

#### ALASKAN THREE-TOED WOODPECKER.

Similar to *P. a. americanus*, but with much more white on back, the white bars much larger and more or less coalesced along median line, forming a more or less continuous longitudinal patch; whitish spots on forehead much larger, sometimes coalesced into a nearly uniform dull white frontal area; upper tail-coverts and lower rump barred or spotted with white;<sup>a</sup> black malar stripe narrower and usually less distinct, and black bars on sides and flanks narrower; averaging slightly larger.

*Adult male*.—Length (skins), 188–215 (202); wing, 113–123 (116.8); tail, 69–80.5 (74.5); culmen, 24–29.5 (27.1); tarsus, 19–21.5 (20); outer anterior toe, 9–11.5 (10.5).<sup>b</sup>

*Adult female*.—Length (skins), 181–205 (196); wing, 109–117 (113.1); tail, 68–77 (73); culmen, 22–26 (23.9); tarsus, 18.5–20.5 (19.3); outer anterior toe, 9–10.5 (9.9).<sup>c</sup>

Hudsonian and Canadian zones in Alaska (St. Michaels; Russian Mission, lower Yukon; Fort Yukon; Nulato; Kowak River; Unalakleet; mountains near Eagle; Lake Clark; Coal Creek; Glacier Mountain; Charlie Creek; Circle; head of Toklat River; Nushagak; Iliamna; Hope; Tyoonok; Seldovia; Fort Kenai; Homer; Haines; Shaktolik; Chilcoot; Portage Bay; Prince of Wales Island; Ioonah, Chichagoff Island; Kadiak), Yukon (Dawson; Macmillan River; Forty-mile; Ogilvie Range; Plateau Mountains; Fort Reliance), and western Mackenzie (Fort Simpson; Fort Liard; Fort Rae; Fort Smith; Fort Anderson; Great Bear Lake; Great Slave Lake; Lake Hardisty; Slave River), and southward through western and central Athabasca (Slave River), Assiniboia (near Grenfell, April 3), and Alberta (Jasper House; Grand Cache; Athabasca Landing; Stony River; Henry House; Banff, August; Red Deer, December), to northern Montana (St. Marys Lake, June 4; Columbia Falls, April, October; Glacier Lake, Swift Current River, October; Clarkes Fork, June 7); west to British Columbia (Saturna Island; Vancouver

<sup>a</sup> Sometimes even the wing-coverts and middle rectrices are spotted with white.

<sup>b</sup> Thirty specimens.

<sup>c</sup> Thirty-three specimens.

Island; Coast Range; Fort Halkett; Caribou) and Washington (Chilowiyuck Lake, August).

*Picoides americanus* (not of Brehm) DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 274 (Ft. Yukon to St. Michaels, Alaska).—COUES, Check List, 1873, no. 301, part; 2d ed., 1882, no. 444, part.—HARTLAUB, Journ. für Orn., 1883, 275 (Chilcoot and Portage Bay, Alaska).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 77, part.

[*Picoides*] *americanus* COUES, Key N. Am. Birds, 1872, 194, part.—SHARPE, Handlist, ii, 1900, 217, part.

*P*[*icoides*] *americanus* COUES, Key N. Am. Birds, 2d ed., 1884, 485, part.

*Picoides tridactylus*, var. *americanus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 532, part.

*Picoides tridactylus americanus* RIDGWAY, Nom. N. Am. Birds, 1881, no. 368, part.

*Picoides americanus* . . . a. *americanus* COUES, Birds Northwest, 1874, 284, part.

*Picoides americanus americanus* GRINNELL (J.), Condor, xi, 1909, 205 (Forty-mile, Yukon Terr.; crit.); xii, 1910, 42 (Rapids, Yukon R., and Russian Mission, lower Yukon, Alaska).

[*Picoides americanus*.] Var. *fasciatus* BAIRD, in Cooper's Orn. Calif., 1870, 385, part (type from Ft. Simpson, Mackenzie; coll. U. S. Nat. Mus.).

*Picoides americanus fasciatus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xviii, July, 1901, 300; Check List, 3d ed., 1910, 190, part.—CHAPMAN, Bull. Am. Mus. N. H., xvi, 1902, 240 (Homer, Alaska, Sept.); xx, 1904, 402 (Seldovia, Kenai Peninsula, Alaska, July).—OSGOOD, North Am. Fauna, no. 24, 1904, 70 (Iliamna, Lake Clark, Chalitna R., etc., Alaska Peninsula); no. 30, 1909, 39 (Circle, Glacier Mt., etc., Alaska), 61 (Ogilvie Range, Yukon Terr.), 89 (Plateau Mts., Yukon Terr.).—PREBLE, North Am. Fauna, no. 27, 1908, 382, part (Ft. Liard, Ft. Rae, and Ft. Simpson, Mackenzie; Athabasca Landing, Alberta; crit.).—KERMODE, Provincial Mus. Victoria, 1909, 49 (Vancouver I. and Coast Range, Brit. Columbia).

*Apertus hirsutus* (not *Picus hirsutus* Vieillot) FINSCH, Abth. Nat. Ver. Bremen, iii, 1872, 61 (Alexandrovsk, Alaska; crit.).

*Picus tridactylus* (not of Linnæus) ADAMS, Ibis, 1878, 427 (St. Michaels, Alaska).

*Picoides tridactylus alascensis* NELSON, Auk, i, April, 1884, 165 (Nulato, Alaska; coll. U. S. Nat. Mus.).

*Picoides americanus alascensis* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 23, Sept. 2, 1885, 355.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, (and 2d ed., 1895), no. 401, a.—TURNER, Contr. Nat. Hist. Alaska, 1886, 166 (Nulato; Ft. Yukon).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 157 (Ft. Liard; Ft. Simpson; Anderson R.; Alaska in general; Kadiak).—MACFARLANE, Proc. U. S. Nat. Mus., xiv, 1891, 438 (Ft. Anderson, Mackenzie, breeding).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 80.—GRINNELL (J.), Pacific Coast Avifauna, no. 1, 1900, 40 (Kowak R., n. w. Alaska, resident).—BISHOP, North Am. Fauna, no. 19, 1900, 78 (Haines, Glacier, Yukon Valley, etc.).—BROOKS, Auk, xvii, 1900, 106 (Cascade Mts., s. to Mt. Baker).

*P*[*icoides*] *americanus alascensis* RIDGWAY, Man. N. Am. Birds, 1887, 287.

[*Picoides americanus*.] Subsp.  $\alpha$ . *Picoides alascensis* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 280 (part only?; Unalakleet, Nulato, and Shaktolik, Alaska; Ft. Reliance, Yukon Terr.; Ft. Halkett, Brit. Columbia; Ft. Simpson, Great Bear Lake, and Mackenzie R., Mackenzie).

*Picoides americanus dorsalis* (not *Picoides dorsalis* Baird) TURNER, Contr. Nat. Hist. Alaska, 1886, 166 (St. Michaels; Ft. Yukon; Nushagak).

(?) *Picoides americanus fumipectus* GRINNELL (J.), Univ. Calif. Pub. Zool., v, no. 2, Feb. 18, 1909, 217 (Hoonah, Chichagoff I., Alaska; coll. Mus. Vertebr. Zool. Univ. Calif.).

(?) *Picoides americanus dorsalis* (not *Picoides dorsalis* Baird?) NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 160 (Ft. Kenai; Kodiak).—MERRIAM, North Am. Fauna, no. 5, 1891, 97 (Salmon R. Mts., Idaho).—FANNIN, Check List Birds Brit. Col., 1891, 28 (mts. e. of Cascade Range, n. to Cassiar).—KERMODE, Prov. Mus. Victoria, 1909, 49 (e. of Cascade Range, Brit. Columbia).

### PICOIDES AMERICANUS DORSALIS (Baird).

#### ALPINE THREE-TOED WOODPECKER.

Similar to white-backed examples of *P. a. fasciatus*, but larger; white markings on back usually all longitudinal (very rarely with any transverse bars of black), white supra-auricular streak usually broader, forehead usually with more black and less whitish spotting, white spots or bars on inner web of innermost secondaries larger, and sides and flanks usually less heavily barred with black.

*Adult male*.—Length (skins), 190–210 (201); wing, 120.5–128 (123.3); tail, 71–77.5 (75.2); culmen, 26–30.5 (28.9); tarsus, 20–22.5 (20.9); outer anterior toe, 10–12 (10.8).<sup>a</sup>

*Adult female*.—Length (skins), 191–212 (198); wing, 118–129 (121.5); tail, 70–81.5 (76.1); culmen, 25–28 (26.5); tarsus, 19.5–21.5 (20.6); outer anterior toe, 10–11.5 (10.6).<sup>a</sup>

Boreal forests of Rocky Mountain district, from northern Montana (Paola; east side Bitterroot Mountains; Gallatin Basin; Belt Mountains) and Wyoming (Lake Fork; Lower Geyser Basin; Laramie Peak; Fort Bridger), southward through higher mountains of Colorado to New Mexico (Pecos Baldy; Upper Pecos River; Zuñi Mountains; Jemez Mountains; Manzano Mountains; Santa Fe Mountains; Twinning; Copperton; La Jara Lake; Cantonment Burgwyn; Rio Grande) and Arizona (San Francisco Mountain; White Mountains; Bakers Butte; Willow Springs; Kaibab Plateau).

*Picoides dorsalis* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 100 (Laramie Peak, Wyoming; coll. U. S. Nat. Mus.); ed. 1860 (Birds N. Am.), 100, atlas, pl. 85, fig. 1; Cat. N. Am. Birds, 1859, no. 84.—MALHERBE, Mon. Pict., i, 1861, 179.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 203.—GRAY, List Birds Brit. Mus., Picturæ, 1868, 31.—MERRIAM, Sixth An. Rep. U. S. Geol. Surv. Terr. for 1872 (1873), 694 (Lower Geyser Basin, Wyoming).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 278 (Ft. Bridger, Wyoming; Santa Fe Mts. and Rio Grande, New Mexico); Ibis, 1891, 467, in text (crit.).

[*Picoides*] *dorsalis* GRAY, Hand-list, ii, 1870, 181, no. 8538.—SHARPE, Hand-list, ii, 1900, 217.

*Tridactylia* *dorsalis* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 26.

*Picus dorsalis* SUNDEVALL, Consp. Av. Picin., 1866, 14.

[*Picoides americanus*.] Var. *dorsalis* BAIRD, in Cooper's Orn. Calif., 1870, 386, 387 (crit.).—COUES, Key N. Am. Birds, 1872, 194.

<sup>a</sup> Ten specimens.



- Picoides americanus*, var. *dorsalis* ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 163 (Mt. Lincoln, Colorado), 180 (mts. of Colorado above 8,000 ft.).—HENSHAW, Zool. Exp. W. 100th Merid., 1875, 391 (mts. near Ft. Garland, South Park, Pagosa, and Rio Grande, Colorado; White Mts., Arizona, Oct.).—SCOTT, Bull. Nutt. Orn. Club, iv, 1879, 95 (Twin Lakes, Colorado).
- Picoides americanus* . . . var. *dorsalis* COUES, Check List, 1873, no. 301a.
- [*Picoides americanus*.] b. *dorsalis* COUES, Birds Northwest, 1874, 285.
- Picoides tridactylus*, var. *dorsalis* RIDGWAY, Bull. Essex Inst., v, Nov., 1873, 185 (Colorado), 194 (Colorado; crit.).
- Picoides tridactylus dorsalis* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 7, 189; Nom. N. Am. Birds, 1881, no. 368a.—DREW, Auk, ii, 1885, 17 (Colorado, breeding at 8,000–12,000 ft.).—HENSHAW, Auk, iii, 1886, 78 (upper Pecos R., New Mexico, resident).
- Picoides americanus*, β. *dorsalis* RIDGWAY, Field and Forest, i, June, 1877, 209 (Colorado).
- Picoides americanus dorsalis* DREW, Bull. Nutt. Orn. Club, vi, 1881, 141 (San Juan Co., Colorado).—(?) WILLIAMS, Bull. Nutt. Orn. Club, vii, 1882, 62 (Belt Mts., Montana).—COUES, Check List, 2d ed., 1882, no. 445.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 401b; 3d ed., 1910, 190.—MEARNS, Auk, vii, 1890, 252 (San Francisco Mt., Arizona, breeding in pine and spruce belts; habits, etc.).—MERRIAM, North Am. Fauna, no. 3, 1890, 92 (San Francisco Mt., in spruce and balsam belt).—RICHMOND and KNOWLTON, Auk, xi, 1894, 303 (Gallatin R., s.-centr. Montana, 7,200 ft., Aug.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 80.—COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 83 (Colorado, resident, 8,000–12,000 ft.).—BANGS, Auk, xvii, 1900, 135 (crit.).—ENDERSON, Univ. Colo. Studies Zool., vi, 1909, 231 (mts. of Colorado, resident).—SAUNDERS, Auk, xxviii, 1911, 37 (Gallatin Co., Montana); Condor, xiv, 1912, 26 (Silver Bow and Jefferson counties, Montana).—JEWETT, Condor, xiv, 1912, 192 (Sawtooth Mts., Idaho, 7,500 ft., Nov.).
- P[icoides] a[mericanus] dorsalis* COUES, Key N. Am. Birds, 2d ed., 1884, 485.
- P[icoides] americanus dorsalis* RIDGWAY, Man. N. Am. Birds, 1887, 287.
- Picoides arcticus* . . . var. *dorsalis* HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 89 (mts. near Ft. Garland, 10,000 ft., and South Park, Colorado, June).
- Picoides arcticus dorsalis* BAILEY (Florence M.), Auk, xxi, 1904, 353 (upper Pecos R., New Mexico, 11,600 ft., breeding.)
- Picoides tridactylus*, var. *americanus* (not *Picoides americanus* Brehm) BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 532, part.

### PICOIDES ARCTICUS (Swainson).

#### BLACK-BACKED THREE-TOED WOODPECKER.

*Adult male*.—Crown bright yellow (canary yellow or naples yellow to orange); rest of pileum, except (usually) extreme anterior portion of forehead, together with orbital, superciliary, and auricular regions, hindneck, and sides of neck, uniform glossy blue-black; rest of upper parts black, or sooty black, the scapulars and interscapulars broadly margined with glossy blue-black, the lesser wing-coverts narrowly margined with the same, the middle wing-coverts and upper tail-coverts margined with deeper black than central portion; outer webs of remiges, except inner or proximal secondaries ("tertials") spotted with white; four middle rectrices black, the next pair mostly black,

but the distal portion, more or less extensively, brownish white or pale rusty brown, usually tipped with black, the three lateral pairs (including rudimentary outer rectrices) mostly white, more or less strongly tinged terminally with brownish; nasal tufts dusky, sometimes finely streaked with paler; extreme anterior portion of forehead usually white, grayish white, or pale grayish, a broad white stripe extending thence across lores and beneath orbital and auricular regions to side of neck; malar region black or blue-black, forming a stripe which extends posteriorly across sides of neck, where usually confluent with the black neck area; under parts white, the sides and flanks broadly barred with black, the bars less regular and sometimes broken into spots or streaks on anterior portion of sides; bill slate color, the mandible usually paler, sometimes light bluish gray or horn gray, especially toward base; iris reddish brown or chestnut; legs and feet dusky grayish (slate color or slate-gray in life); length (skins), 205-248 (220); wing, 125-134 (129.5); tail, 74-85 (77.9); culmen, 31-35 (33); tarsus, 21.5-24 (22.9); outer anterior toe, 11.5-13.5 (12.6).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without any yellow on crown, the entire pileum being uniform glossy blue-black; length (skins), 207-234 (221); wing, 123-133.5 (126.8); tail, 73.5-84.5 (78.8); culmen, 28.5-34.5 (30.7); tarsus, 21-23 (22); outer anterior toe, 11-13 (12.2).<sup>b</sup>

*Young male*.—Similar to the adult male, but yellow crown-patch smaller, black of upper parts duller, white of under parts duller and

<sup>a</sup>Thirty-nine specimens.

<sup>b</sup>Thirty-four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Two adult males from Newfoundland.....	125.3	82.5	32.5	22.5	12.5
Ten adult males from New Brunswick (3), Nova Scotia (1), Maine (5), and New York (1).....	129.5	80.1	32.8	22.9	12.4
Ten adult males from Minnesota to Mackenzie.....	130.3	80.4	33.8	23.2	13
One adult male from Alaska.....	125	.....	34	22.5	13
Six adult males from Montana (4) and Idaho (2).....	130	79.5	32.7	22.8	12.7
Ten adult males from California (4), western Nevada (2), Oregon (2), and British Columbia (2).....	129.7	79.2	32.6	22.5	12.2
FEMALES.					
One adult female from Newfoundland.....	125.5	82.5	30	22	12.5
Ten adult females from New Brunswick (1), Maine (5), and New York (4).....	126.6	78.7	30.1	22	12.3
Ten adult females from Minnesota to Mackenzie.....	127	79.7	31.5	22.2	12.2
Two adult females from Montana (1) and Idaho (1).....	126	75.3	31	22	12
Ten adult females from California (2), western Nevada (1), Oregon (1), Washington (1), and British Columbia (5).....	127	78.5	30.8	21.9	11.9
One adult female from Ungava.....	126.5	78	29	22	12.5

tinged on chest with pale brownish gray, and bars on sides and flanks slate-black and much less sharply defined.

*Young female*.—Similar to the young male, but yellow crown-spot much smaller (sometimes absent?).

Canadian life-zone of North America; north to central Alaska (Mechatna River; Yukon River), Yukon (Fort Reliance), southern Mackenzie (Fort Anderson; Fort Rae; Fort Providence), central Keewatin, and northern Ungava (Forks); breeding southward to Maine, New Hampshire (Franconia), Vermont (Lunenburg), northern New York (Lewis, Hamilton, and Herkimer counties), northern Ontario (Parry Sound; Muskoka), northern Michigan (Porcupine Mountains; Cheboygan County; Crawford County; Oscoda County), northern Minnesota (Carlton, Cass, and Becker counties), Montana (Prickly Pear Canyon between Helena and Fort Shaw; Columbia Falls), Wyoming (Black Hills), Oregon (Plymouth; Fort Klamath) and northeastern California (Honey Lake); in winter, sporadically or irregularly southward to Massachusetts (Plymouth; Lynn; Woburn; Winchendon; Hyde Park; Cape Cod), Connecticut (East Windsor Hill), Pennsylvania (Pocono Mountains), southern Ontario, northern Ohio, northeastern Illinois (Chicago), Wisconsin (Menomonie), eastern Nebraska (Omaha), etc., and in Sierra Nevada to latitude 39° or farther.

*Picus (Apternus) arcticus* SWAINSON, Fauna Bor.-Am., ii, 1831, pp. xxvi, 313 (eastern slope of Rocky Mts. near sources of Athabasca R.).—NUTTALL, Man.

Orn. U. S. and Can., Water Birds, 1834, 603; Land Birds, 2d ed., 1840, 691.

*Apternus arcticus* SWAINSON, Classif. Birds, ii, 1837, 306.—BONAPARTE, Geog. and Comp. List, 1838, 39.—NEWBERRY, Rep. Pacific R. R. Surv., vi, 1857, 91 (Cascade Mts., Oregon).

[*Apternus*] *arcticus* BONAPARTE, Consp. Av., i, 1850, 139; Ateneo Italiano, ii, 1854, 123 (Consp. Volucr. Zygod., 1854, 8).—LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 75.

*A[pternus] arcticus* REICHENBACH, Handb. Scansores, Picinæ, 1854, 361, pl. 630, figs. 4189, 4190, 4191.

*Picus arcticus* SWAINSON, Fauna Bor.-Am., ii, 1831, pl. 57.—GLOGER, Handb. Naturg. Vög. Eur., 1834, 462, footnote.—NUTTALL, Man. Orn. U. S. and Can., 2d ed., i, 1840, 691.—AUDUBON, Synopsis, 1839, 182; Birds Am., oct. ed., iv, 1842, 266, pl. 268.—PUTNAM, Proc. Essex Inst., 1856, 214 (Massachusetts).—SUNDEVALL, Consp. Av. Picin., 1866, 15.

*P[icus] arcticus* WILLIS, An. Rep. Smithsonian. Inst. for 1858 (1859), 284 (Nova Scotia, resident).

*P[icoides] arcticus* GRAY, Gen. Birds, ii, 1845, 434.—COUES, Key N. Am. Birds, 2d ed., 1884, 485.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 377 (n. Illinois, winter visitant); Man. N. Am. Birds, 1887, 287.—NELSON, Bull. Essex Inst., viii, 1876, 115 (Chicago, Illinois, 1 spec.).

*Picoides arcticus* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 98; Cat. N. Am. Birds, 1859, no. 82.—MALHERBE, Mon. Picid., i, 1861, 174; iii, 1861, pl. 39, figs. 5, 6.—BOARDMAN, Proc. Bost. Soc. N. H., 1862, 123 (Maine).—BLAKISTON, Ibis, 1863, 51 (Red R. Settlement, Manitoba; Mackenzie R.; w. slope Rocky Mts.).—LORD, Proc. Roy. Artil. Inst. Woolwich, iv, 1864, 112 (mts. Brit. Columbia).—MCILWRAITH, Proc. Essex Inst., 1866, 83 (Hamilton, Ontario,



winter).—TURNBULL, *Birds E. Penn. and N. J.*, 1869, 41 (Pocono Mts., n. Pennsylvania, occasional).—COOPER, *Orn. Calif.*, 1870, 384 (summit of Sierra Nevada).—COUES, *Check List*, 1873, no. 300; 2d ed., 1882, no. 443; *Birds Northwest*, 1874, 284.—MERRIAM, *Sixth An. Rep. U. S. Geol. Surv. Terr.*, 1872 (1873), 694 (Lower Geyser Basin, Wyoming); *Trans. Conn. Ac. Sci.*, iv, 1877, 64 (Simsbury and East Winsor Hill, Connecticut, winter); *Bull. Nutt. Orn. Club*, iv, 1879, 6 (Lewis Co., New York, resident); vii, 1882, 236 (Point de Monts, Quebec, resident); *North Am. Fauna*, no. 16, 1899, 115 (Mt. Shasta, California, breeding).—BAIRD, BREWER, and RIDGWAY, *Hist. N. Am. Birds*, ii, 1874, 530, pl. 50, fig. 1.—RIDGWAY, *Orn. 40th Parallel*, 1877, 548 (Sierra Nevada, near Carson City, winter); *Proc. U. S. Nat. Mus.*, iii, 1880, 189; *Nom. N. Am. Birds*, 1881, no. 367; *Orn. Illinois*, i, 1889, 379.—BELDING, *Proc. U. S. Nat. Mus.*, i, 1878, 429 (Soda Springs and Summit Meadows, Sierra Nevada, Sept.).—ROBERTS, *Bull. Nutt. Orn. Club*, iv, 1879, 154 (Carlton Co., Minnesota, breeding; Minneapolis, winter); *An. Rep. Geol. and N. H. Surv. Minn.*, 1880, 163 (Grand Marais and Black Point, Minnesota, Aug.).—BREWSTER, *Bull. Nutt. Orn. Club*, iii, 1878, 180 (descr. young male); vi, 1881, 182 (Plymouth, Massachusetts, Dec.); viii, 1883, 122 (Lynn, Massachusetts, abundant winter of 1860–61); *Proc. Bost. Soc. N. H.*, xxii, 1883, 381 (near Gaspe and mouth of Mingan R., Gulf of St. Lawrence, summer); Auk, i, 1884, 93 (Woburn, Massachusetts, Oct., 1883); v, 1888, 254 (Ft. Klamath, Oregon; crit.), 390 (Winchendon, Massachusetts, winter).—DEANE, *Bull. Nutt. Orn. Club*, v, 1880, 56 (Hyde Park, Massachusetts, winter).—GUNN, *Bull. Nutt. Orn. Club*, vi, 1881, 119 (Cheboygan Co., Michigan, breeding).—WILLIAMS, *Bull. Nutt. Orn. Club*, vii, 1882, 62 (Belt Mts., Montana, breeding).—BATCHELDER, *Bull. Nutt. Orn. Club*, vii, 1882, 150 (Grand Falls and Fairfield, New Brunswick).—WOOD, *Orn. and Oolog.*, ix, 1884, 62 (30 m. n. of Mackinac, Michigan).—TURNER, *Proc. U. S. Nat. Mus.*, viii, 1885, 242 (Labrador).—AMERICAN ORNITHOLOGISTS' UNION, *Check List*, 1886 (and 2d ed., 1895), no. 400; 3d ed., 1910, 189.—RALPH and BAGG, *Trans. Oneida Hist. Soc.*, iii, 1886, 123 (Herkimer and Hamilton Counties, New York, breeding).—SETON, *Auk*, iii, 1886, 155 (Big Plain and Red R. Valley, w. Manitoba).—ALLEN, *Bull. Am. Mus. N. H.*, i, 1886, 246 (Massachusetts records).—NELSON, *Rep. Nat. Hist. Coll. Alaska*, 1887, 157 (Ft. Reliance, upper Yukon).—FAXON and ALLEN, *Auk*, v, 1888, 151 (Franconia, New Hampshire, 1 spec., June).—BENDIRE, *Auk*, v, 1888, 240 (Ft. Klamath, Oregon, breeding); *Life Hist. N. Am. Birds*, ii, 1895, 74.—MERRILL, *Auk*, v, 1888, 254 (Ft. Klamath, Oregon, breeding).—BRITAIN and COX, *Auk*, vi, 1889, 117 (Restigouche Valley, New Brunswick, summer).—DUTCHER, *Auk*, vi, 1889, 136 (Long Island, 1 spec., winter).—HASBROUCK, *Auk*, vii, 1890, 206 (near Syracuse and Tully, centr. New York, winter).—HARGITT, *Cat. Birds Brit. Mus.*, xviii, 1890, 282 (Big Moose Lake and Hamilton Co., New York, June; Menominee, Wisconsin, Oct.; Honey Lake, California, June; etc.).—CANTWELL, *Orn. and Oolog.*, xv, 1890, 133 (n. Minnesota, breeding).—THOMPSON, *Proc. U. S. Nat. Mus.*, xiii, 1890, 549 (Manitoba, resident; habits).—MACFARLANE, *Proc. U. S. Nat. Mus.*, xiv, 1891, 437 (Ft. Anderson, Mackenzie, breeding).—COOK, *Bull. Mich. Agric. Exp. Sta.*, 1893, 88 (northern peninsula of Michigan, breeding).—FLEMING, *Auk*, xviii, 1901, 39 (Parry Sound and Muskoka, n. Ontario, breeding).—CARY, *Auk*, xviii, 1901, 234 (Black Hills, Wyoming, June).—HOWE, *Contr. Am. Orn.*, ii, 1902, 15 (Lunenburg, Vermont, breeding).—CURRIER, *Auk*, xxi, 1904, 35 (Leech Lake, Minnesota, breeding).—NICHOLS, *Auk*, xxi, 1904, 81 (Cape Cod, Massachusetts, 1 spec., Dec.).—OSGOOD, *North Am. Fauna*, no. 24, 1904, 70 (Malchatna R., Alaska).—WOOD and FROTHINGHAM, *Auk*, xxii, 1905, 47 (Crawford Co., Michigan, July, Sept.; Oscoda Co., June).—WOOD, *Wilson Bull.*, no. 51, 1905, 50 (Les Che-

- neaux I., Michigan, abundant in Oct. and Nov.).—WRIGHT, Auk, xxii, 1905, 80 (Middlesex Co., Massachusetts, 1 spec., Oct., Nov.).—ADAMS, Ecol. Surv. N. Mich., 1906, 115 (Porcupine Mts., Michigan, July).—ANDERSON, Proc. Davenport Ac. Sci., xi, 1907, 274 (Omaha, Nebraska, 1 spec., Dec. 15; Dakota City, 1 spec.).—WOODRUFF, Bull. vi, Chicago Ac. Sci., 1907, 110 (Chicago area, rare winter visitant).—TOWNSEND and ALLEN, Proc. Bost. Soc. N. H., xxxiii, 1907, 376 (Labrador, common resident).—PREBLE, North Am. Fauna, no. 27, 1908, 381 (north to lat. 63° on Mackenzie R.).—NASH, Vertebr. Ont., 1908, Birds, p. 49 (n. Ontario, resident).—GRINNELL, Condor, xii, 1910, 42 (Yukon R., Alaska).
- [*Picoides*] *arcticus* GRAY, Hand-list, ii, 1870, 181, no. 8539.—COUES, Key N. Am. Birds, 1872, 194.—SHARPE, Hand-list, ii, 1900, 217.
- Picoides arcticus arcticus* BANGS, Auk, xvii, April, 1900, 129 (crit.).
- [*Tridactylia*] *arctica* CABANIS and HEINE, Mus. Hein., iv, heft 2, 1863, 27.
- Picus tridactylus* (not of Linnæus) BONAPARTE, Am. Orn., ii, 1828, 14, pl. 14, fig. 2.—JARDINE, ed. Wilson's Am. Orn., iii, 1832, 423, pl. 14, fig. 2.—AUDUBON, Orn. Biog., ii, 1834, 198; v, 1839, 538, pl. 132.—NUTTALL, Man. Orn. U. S. and Can., 2d ed., i, 1840, 578.
- Picoides arcticus tenuirostris* BANGS, Auk, xvii, no. 2, April, 1900, 131 (Ft. Klamath, Oregon; coll. W. Brewster).
- Picoides tenuirostris* GRINNELL (J.), Pacific Coast Avifauna, no. 3, June, 1902, 38 (California range).—RAY, Auk, xx, 1903, 184 (high Sierra Nevada, centr. California, breeding).
- [*Picoides*] *tenuirostris* SHARPE, Hand-list, ii, 1900, 217.

#### Genus PICUMNUS Temminck.

- Picumnus* TEMMINCK, Planches Col., livr. 62, Sept., 1825, text to pl. 371. (Type, *P. cirrhatus* Temminck.)
- Asthenurus* SWAINSON, Zool. Journ., iii, 1828, 353. (Type, *Pipra minuta* Linnæus.)
- Piculus* GEOFFROY SAINT-HILAIRE, Nouv. Ann. du Mus. d'Hist. Nat., ser. 3, i, 1832, 396. (Type, *Pipra minuta* Linnæus.)
- Microcolaptes* BONAPARTE, Ateneo Italiano, ii, 1854, 126 (Consp. Volucr. Zygod., 1854, 11). (Type, *Picumnus d'orbignianus* Lafresnaye.)
- Craugiscus* a CABANIS and HEINE, Mus. Hein., iv, heft 2, May, 1863, 10. (Type, *Picumnus cinnamomeus* Wagler.)

Very small Picumninæ (wing about 49–55 mm.) with nostril much nearer to tomium than to culmen, gonys much longer than mandibular rami, outermost (tenth) primary less than half as long as ninth, inner web of middle rectrices white or pale yellow, culmen longer than outer hind toe without claw, and without whitish or dusky stripes on side of head.

Bill shorter than head, much compressed, cuneate in lateral profile, pointed, or not distinctly chisel-shaped at tip, its width at anterior end of nostrils decidedly less than its depth at same point; culmen straight or slightly convex, distinctly but not sharply ridged; gonys straight or very nearly so, ascending terminally, faintly ridged; maxilla without supranasal ridge or prenasal groove, its tomium slightly convex and deflected for basal half. Nostril very

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a "Diminutivform von *κραυγός*, Specht." (Cabanis and Heine.)

small, longitudinally elliptical or subcuneate, much nearer to tomium than to culmen, covered by a conspicuous antrorse and semierect dense prefrontal tuft of rather short, bristly tipped feathers. Feathers of malar apex semiantrorse, short, but with distinct bristle-like tips, those of the chin with recurved, semiantrorse, bristle-like tips. Orbital region naked for a considerable distance around eyes, the margin of eyelids without feathers. Wing short and rounded, very concave beneath, the longest primaries exceeding distal secondaries by much less than length of culmen; sixth and seventh or fifth, sixth and seventh primaries longest, the eighth shorter than fifth (sometimes nearly equal to third), the ninth much shorter than first, the tenth less than half as long as ninth. Tail a little more than half to three-fifths as long as wing, strongly rounded or graduated, the rectrices rather narrow, not rigid, with slender shaft and soft, rounded tip. Tarsus longer than outer hind toe without claw, the planta tarsi with a single row of large quadrate scutella; outer toes equal in length or the posterior one very slightly longer; inner front toe with its claw reaching nearly (sometimes quite) to base of claw of outer toe.

*Coloration*.—Pileum black dotted with white (the crown partly red or orange in adult males); back and scapulars grayish brown or olive, sometimes dotted with white or barred or squamated with dusky; tail black, the inner web of middle pair of rectrices white or pale yellow; under parts whitish or yellowish barred or squamated with black (in part, at least), or brown spotted with white or with chest and indistinct stripes on sides plain olive.

*Range*.—Honduras to southern Brazil, Paraguay, Bolivia, and Peru. (About thirty-five species, all but one of them South American.<sup>a</sup>)

KEY TO THE SUBSPECIES OF *PICUMNUS OLIVACEUS*.

- a. Crown streaked with orange-red or yellowish orange. (*Adult males*.)
  - b. Crown streaked with orange-red (scarlet).
    - c. Back, etc., more buffy or yellowish olive; chest more buffy; yellow of posterior under parts more creamy; wing averaging 55.8, tail 28.8, culmen 11.6, outer anterior toe 10.4. (Central Colombia.)
 

***Picumnus olivaceus olivaceus* (extralimital).<sup>b</sup>**

    - cc. Back, etc., darker and less buffy or yellowish olive; chest less buffy; yellow of posterior under parts less creamy (more sulphur yellow); wing averaging 53.3, tail 28, culmen 12.3, outer anterior toe 11.2 (Eastern Nicaragua and Honduras.).....***Picumnus olivaceus dimotus* (p. 307).**

<sup>a</sup> The above generic description is based on *P. olivaceus*, *P. spilogaster*, *P. cirrhatu*s, *P. minutus*, *P. squamulatus*, *P. pygmaeus*, and *P. guttifer*.

<sup>b</sup> *P[icumnus] olivaceus* Lafresnaye, Rev. Zool., viii, Jan., 1845, 7 (Bogotá, Colombia; coll. Massena).—*Picumnus olivaceus* SUNDEVALL, Consp. Picin., 1866, 104; Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 548, part (excl. syn. *P. flavotinctus* and specimens from Honduras).—*Picumnus olivaceus olivaceus* Ridgway, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 34 (geog. range).



bb. Crown streaked with yellowish orange or orange-yellow.<sup>a</sup>

c. Back, etc., much more yellowish olive; under parts more buffy; smaller (wing averaging 51.4, tail 24.6, culmen 11.1, outer anterior toe 9.5). (Eastern Panama.).....**Picumnus olivaceus panamensis** (p. 304).

cc. Back, etc., much less yellowish olive; under parts less buffy; larger (wing averaging 53.1, tail 27.7, culmen 11, outer anterior toe 10.7). (Western Panama and southwestern Costa Rica.)

**Picumnus olivaceus flavotinctus** (p. 306).

aa. Crown without red, orange, or orange-yellow streaks (minutely dotted with white instead).

b. Ground color of pileum deep black.

c. Back, etc., more buffy olive.

**Picumnus olivaceus olivaceus**, adult female (extralimital).

cc. Back, etc., more greenish olive. (Western Colombia.)

**Picumnus olivaceus granadensis**, adult female (extralimital).<sup>b</sup>

bb. Ground color of pileum sooty, sooty black, or dull black.

c. Ground-color of pileum sooty black or dull black; general coloration darker and less buffy; wing and tail longer (wing 52-54, tail 26-30).

d. Back, etc., clearer or more greenish olive; chest less yellowish or buffy; white dots on pileum larger.

**Picumnus olivaceus dimotus**, adult female (p. 307).

dd. Back, etc., more buffy olive; chest more buffy; white dots on pileum smaller, those on crown less numerous.

**Picumnus olivaceus flavotinctus**, adult female (p. 306).

cc. Ground color of pileum dark sooty brown; general coloration paler and more buffy; wing and tail shorter (wing 50.5, tail 24).

**Picumnus olivaceus panamensis**, adult female (p. 305).

## PICUMNUS OLIVACEUS PANAMENSIS Ridgway.

### PANAMÁ PICULET.

Similar to *P. o. granadensis*,<sup>b</sup> but smaller; coloration decidedly more yellowish olive, pileum much duller black, and feathers of malar region and chin more narrowly margined with black or with these markings obsolete.

*Adult male*.—Pileum dull black, the crown with short, narrow streaks of orpiment orange, the occiput with small circular spots or dots of white; back, scapulars, and rump plain yellowish olive, the wing-coverts similar, but darker and margined or edged with color of back or slightly paler; remiges dusky grayish brown, the secondaries broadly (but not sharply) edged with dull light buffy olive-yellowish (nearly pale wax yellow), the median portion of proximal secondaries (broadly) light grayish brown or hair brown, the primaries narrowly

<sup>a</sup> I have not seen the adult male of *P. o. granadensis*, which belongs to this section.

<sup>b</sup> *Picumnus granadensis* Lafresnaye, Rev. Zool., x, March, 1847, 78 (Cali, w. Ecuador; coll. De Lattre; type now in coll. Phila. Acad. Nat. Sci.); Malherbe, Mon. Picid., ii, 1862, pl. 118, fig. 3; Sundevall, Consp. Picin., 1866, 104. [*Picumnus olivaceus*.] Subsp. *α. Picumnus granadensis* Hargitt, Cat. Birds Brit. Mus., xviii, 1890, 549, part (excl. specimens from Panama, Chiriqui, and Ecuador).—*Picumnus olivaceus granadensis* Ridgway, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 34 (geog. range).

I have seen only the female of this form.

edged (except distally) with pale yellowish olive; upper tail-coverts pale buffy yellow; tail dull black, the middle pair of rectrices with inner web and inner portion of outer web pale buffy yellow (pale naples yellow or straw yellow), the two outer pairs with a broad, oblique subterminal area of the same or pale yellowish buff; auricular region plain light yellowish or buffy olive, the feathers along upper margin with a guttate or cuneate streak of dull white, the general light buffy olive color fading below to pale olive-buffy on chin and throat, this passing into deeper olive-buffy or pale buffy olive (more buffy than color of auricular region) on chest and upper breast; rest of under parts light buffy yellow (nearly straw or naples yellow) rather broadly but not sharply streaked with grayish brown or olive; under wing-coverts mostly buff, the inner webs of remiges broadly edged with pale yellowish buff or buffy yellow; bill blackish terminally, more grayish basally; feet dusky grayish (in dried skins); length (skins), 83–85 (84); wing, 49.5–53.5 (51.4); tail, 24–25.5 (24.6); culmen, 10.5–12 (11.1); tarsus, 11.5–12.5 (12); outer anterior toe, 10–10.5 (10.4).<sup>a</sup>

*Adult female*.—Similar to the adult male, but crown without orange streaks (sparsely and minutely dotted with white), the ground color dark sooty brown rather than blackish; length (skin), 76; wing, 50.5; tail, 24; culmen, 12; tarsus, 12.5; outer anterior toe, 10.5.<sup>b</sup>

*Young male*.—Essentially like adults, but dark sooty of pileum passing anteriorly into light brownish gray on forehead, nape and

<sup>a</sup> Four specimens.

<sup>b</sup> One specimen.

Average measurements of the several forms of this species (according to material examined) are as follows:

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer ante- rior toe.
MALES.					
Seven adult males of <i>P. o. olivaceus</i> (from Bogotá, Colombia) . . .	55.8	28.8	11.6	12.4	10.4
(No adult males of <i>P. o. granadensis</i> seen) . . . . .					
Four adult males of <i>P. o. panamensis</i> (from eastern Panama) . .	51.4	24.6	11.1	12	10.4
Ten adult males of <i>P. o. flavotinctus</i> from southwestern Costa Rica . . . . .	53.1	27.7	11	12.2	10.7
Three adult males of <i>P. o. dimotus</i> from Honduras (2) and eastern Nicaragua (1) . . . . .	53.3	28	12.3	12.5	11.2
FEMALES.					
One adult female of <i>P. o. olivaceus</i> , from Bogotá . . . . .	54.5	28.5	10.5	12	9.5
Four adult females of <i>P. o. granadensis</i> , from near Honda, western Colombia . . . . .	54.2	27.2	11.2	12.2	10.5
One adult female of <i>P. o. panamensis</i> , from eastern Panama . .	50.5	24	12	12.5	10.5
Ten adult females of <i>P. o. flavotinctus</i> , from southwestern Costa Rica . . . . .	52.7	27.7	11	12.2	10.4
One adult female of <i>P. o. dimotus</i> , from Honduras . . . . .	54	27.5	11	12.5	10.5

sides of occiput streaked with dull white (instead of dotted with pure white), wing-coverts distinctly margined with pale buffy olive or olive-buffy, and streaks on sides, etc., more dusky.

Eastern Panamá (Lion Hill and Obispo stations, Panamá Railway).

*Picumnus granadensis* (not of Lafresnaye) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 333 (Lion Hill, e. Panama).

*Picumnus olivaceus* (not of Lafresnaye) HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 548, part (in synonymy).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 452, part (Lion Hill and Obispo, e. Panama).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 18 (Loma del Leon, i. e., Lion Hill, e. Panama; crit.).

*Picumnus olivaceus panamensis* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 34 (Lion Hill Station, Panama; coll. U. S. Nat. Mus.).

### PICUMNUS OLIVACEUS FLAVOTINCTUS (Ridgway).

#### VERAGUA PICULET.

Similar to *P. o. panamensis* but larger (except bill), and coloration darker and duller, the color of back, etc., much less yellowish olive, under parts less buffy, and black margins to feathers of malar region and chin more distinct. Much more closely resembling *P. o. granadensis* in general coloration but pileum much duller black.

*Adult male*.—Length (skins), 82–89 (86); wing, 51–54.5 (53.1); tail, 26.5–29.5 (27.7); culmen, 10.5–11.5 (11); tarsus, 11.5–13 (12.2); outer anterior toe, 10–11 (10.7).<sup>a</sup>

*Adult female*.—Length (skins), 83–89 (85); wing, 52–54 (52.7); tail, 26–30 (27.7); culmen, 10.5–11.5 (11); tarsus, 11.5–12.5 (12.2); outer anterior toe, 10–11 (10.4).<sup>a</sup>

Western Panamá (Divala; Bugaba; Mina de Chorchá), and southwestern Costa Rica (Pozo Azul de Pirris; Pozo del Rio Grande; Buenos Aires; Boruca; Palmár; Terraba; Paso Real; El General).

*Picumnus flavotinctus* RIDGWAY, Proc. U. S. Nat. Mus., xi, sig. 34, Sept. 20, 1889, 543 (Pozo Azul de Pirris, s. w. Costa Rica; coll. U. S. Nat. Mus.).

*Picumnus olivaceus flavotinctus* HARTERT, Novit. Zool., ix, Dec. 16, 1902, 606 (crit.).—BANGS Bull. Mus. Comp. Zool., xxxix, 1903, 147, in text; Auk, xxiv, 1907, 293 (Boruca, Paso Real, and Pozo del Rio Grande, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 591 (lowlands of s. w. Costa Rica; habits).—RIDGWAY, Proc. Biol. Soc. Wash., xxiv, 1911, 34 (geog. range). *P[icumnus] o[livaceus] flavotinctus* HELLMAYR, Bull. Brit. Orn. Club, xxiii, 1909, 67, in text.

*Picumnus olivaceus* (not of Lafresnaye) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 212 (Mina de Chorchá and Bugaba, w. Panama; crit.).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 24; Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1888, 124 (Costa Rica).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 548, part (in synonymy).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 452, part (Pozo Azul de Pirris, Costa Rica; Bugaba and Mina de Chorchá, w. Panama).

<sup>a</sup> Ten specimens, from Costa Rica.



*Picumorus olivaceus* CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 46 (Palmár, Boruca, Térraba, and Buenos Aires, s. w. Costa Rica).

[*Picumnus olivaceus*.] Subsp.  $\alpha$ . *Picumnus granadensis* (not *P. granadensis* Lafresnaye) HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 540, part (in synonymy).

*Picumnus granadensis* (not of Lafresnaye) BANGS, Auk, xviii, 1901, 361 (Divala, w. Panama).

### PICUMNUS OLIVACEUS DIMOTUS (Bangs).

#### HONDURAS PICULET.

Similar to *P. o. olivaceus*,<sup>a</sup> but slightly smaller (especially the bill), color of back, etc., darker and less buffy olive, and chest darker and less buffy olive. Similar also to *P. o. flavotinctus*, but larger (especially the bill), throat more whitish (less buffy), and adult male with streaks on crown orange-red (scarlet), as in *P. o. olivaceus*, instead of yellowish orange or orange-yellow.

*Adult male*.—Length (skins), 92–94.5 (93.5); wing, 53–54 (53.3); tail, 27.5–29 (28); culmen, 12–12.5 (12.3); tarsus, 12–13 (12.5); outer anterior toe, 11–11.5 (11.2).<sup>b</sup>

*Adult female*.—Length (skin), 93; wing, 54; tail, 27.5; culmen, 11; tarsus, 12.5; outer anterior toe, 10.5.<sup>c</sup>

Caribbean slope of Nicaragua (San Carlos) and Honduras (Céiba; San Pedro Sula; Julián).

*Picumnus olivaceus* (not of Lafresnaye) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837, 839 (Julian and San Pedro, Honduras).—HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 548, part (Julian and San Pedro, Honduras).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 519 (San Carlos, e. Nicaragua; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 452 (Julian and San Pedro, Honduras).

*Picumnus dimotus* BANGS, Bull. Mus. Comp. Zool., xxxix, July, 1903, 146 (Ceiba, Honduras; coll. E. A. and O. Bangs).

*Picumnus olivaceus dimotus* RIDGWAY, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 34 (geog. range).

### Genus NESOCTITES Hargitt.

*Nesoctites* <sup>d</sup> HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 552. (Type, *Picumnus micromegas* Sundevall.)

Large Picumninæ (wing 68–75 mm.) with nostril much nearer to culmen than to tomium, gonys but little longer than mandibular rami, outermost primary more than half as long as ninth, no stripes on side of head, and without black, white, or pale yellow on rectrices.

Bill shorter than head, much compressed anteriorly, subcuneate in lateral profile, pointed at tip, its width at anterior end of nostrils

<sup>a</sup> See p. 303.

<sup>b</sup> Three specimens.

<sup>c</sup> One specimen.

<sup>d</sup> Νῆσος, island; κτίτης, a colonist, inhabitant. (Richmond.)

slightly less than its depth at same point; culmen slightly convex, distinctly but not sharply ridged; gonys slightly longer than mandibular rami, straight, ascending terminally, slightly prominent basally. Nostril small, longitudinally elliptical or narrowly ovate, situated much nearer to culmen than to tomium, partly covered by an antrorse or semierect prefrontal tuft of short, stiff, feathers without elongated bristle-like tips. Rictal region with obvious but not conspicuous bristles, the feathers of malar apex and chin with rather distinct bristle-like, semiantrorse tips. Orbital region mostly feathered. Wing moderate, much rounded, very concave beneath, the longest primaries exceeding distal secondaries by about one-fifth the length of wing; sixth and seventh primaries longest, the eighth slightly shorter than fifth, the ninth shorter than first, the tenth (outermost) more than half as long as ninth. Tail slightly (but decidedly) more than half as long as wing, strongly rounded, the rectrices not rigid, moderately broad, with shaft slender and tip soft and rounded. Tarsus nearly as long as outer hind toe with claw, the planta tarsi with a single row of large quadrate scutella, these in contact on inner side with the similar but somewhat larger scutella of the acrotarsium but on the outer side separated by a longitudinal space, undivided for the greater part but on lower portion broken into several irregular scutella; outer hind toe distinctly longer than outer front toe; inner front toe relatively short, reaching (without claw) but little beyond subterminal articulation of outer toe, its claw falling decidedly short of base of claw of outer toe.

*Coloration*.—Above plain olive, including tail, the crown with a yellowish patch (enclosing a smaller one of dull red in adult male); under parts pale yellowish, streaked and spotted with dusky.

*Range*.—Island of Haiti, Greater Antilles. (Monotypic.)

#### NESOCTITES MICROMEGAS (Sundevall).

##### HAITIAN PICULET.

*Adult male*.—Forehead grayish-olive, the feathers of posterior portion tipped with olive-yellow; rest of pileum olive-yellow, citron yellow, or dull canary yellow superficially (the feathers olive beneath surface), the posterior crown or anterior portion of occiput with a spot of brownish red (nearest madder brown, but brighter and more reddish); rest of upper parts plain olive-green, slightly more brownish on secondaries, the hindneck sometimes tinged with yellow; superciliary region, upper portion of auricular region, and sides of neck grayish brown, the latter (also lower portion of hindneck) more or less distinctly spotted with dull whitish or pale yellowish buffy; lower portion of auricular region streaked with whitish and brownish gray; loreal and suborbital regions dull white to pale brownish buffy; malar region, chin, and throat yellowish white, the first narrowly (some-

times obsoletely) barred with dusky grayish, the throat sparsely streaked or flecked with dusky grayish (sometimes nearly immaculate), the feathers grayish basally; rest of under parts pale sulphur or primrose yellow, broken by numerous, mostly guttate, streaks of dusky, these broadest (more spot-like) on flanks and under tail-coverts; under wing-coverts and broad edging to inner webs of remiges pale cinnamon-buff; bill horn color, darker on culmen (especially toward tip), the mandible paler and more grayish, at least on basal half; feet dark grayish (in dried skins); length (skins), 122–137 (129); wing, 68–74 (70.2); tail, 37–43 (39); culmen, 15–17 (15.7); tarsus, 17–18 (17.3); outer anterior toe, 13–14 (13.4).<sup>a</sup>

*Adult female*.—Similar to the adult male, but without the red spot on crown; length (skins), 126–143 (134); wing, 70.5–75 (73.2); tail, 39–43.5 (41.5); culmen, 17–18 (17.2); tarsus, 17–18.5 (17.8); outer anterior toe, 14–15.5 (14.7).<sup>a</sup>

*Young (both sexes)*.—Similar to the adult female.

Island of Haiti (Jacmé and Petiónville, Haiti; Samaná, La Canita, Santo Domingo, Puerto Plata, Catare, and Aguacate, Santo Domingo).

*Bucco cayanensis* (not of Gmelin, 1788) SALLÉ, Proc. Zool. Soc. Lond., 1857, 234.

*Chloronerpes passerinus* (not of Bonaparte, ex *Picus passerinus* Linnæus) SALLÉ, Proc. Zool. Soc. Lond., 1857, 234 (Santo Domingo).

*C[ampias] passerinus* CABANIS and HEINE, Mus. Hein., iv, heft. 2, 1863, 147 (Haiti).

*Picus passerinus* (not of Linnæus) DRAPIEZ, Dict. Class. d'Hist. Nat., xiii, 1828, 504 (Santo Domingo).—BRYANT, Proc. Bost. Soc. N. H., xi, 1867, 96 (Santo Domingo).

*Picumnus micromegas* SUNDEVALL, Consp. Av. Picin., 1866, 95 (Rio Janeiro, Brazil, error; coll. Stockholm Mus.; see Tristram, Ibis, 1884, 167, 168).—BRYANT, Proc. Bost. Soc. N. H., xi, 1867, 96 (Santo Domingo).—GRAY, List Birds Brit. Mus., Pictidæ, 1868, 28.—PELZELN, Orn. Bras., 1870, 442.—CORY, Auk, iii, 1886, 373; Birds West Ind., 1889, 167.—MAYNARD, Cat. Birds West Ind., 1903, 12.

*P[icumnus] micromegas* TRISTRAM, Ibis, 1884, 167 (Santo Domingo; crit.).

*P[icumnus] micromegas* GRAY, Hand-list, ii, 1870, 180, no. 8530.

*Nesocittes micromegas* HARGITT, Cat. Birds Brit. Mus., xviii, 1890, 552 (Samaná, Santo Domingo).—CORY, Cat. West Ind. Birds, 1892, 12, 103, 131.—CHERRIE, Contr. Orn. San Dom., 1896, 20 (Santo Domingo City, Catare, and Aguacate, Santo Domingo; habits).

*[Nesocittes] micromegas* SHARPE, Hand-list, ii, 1900, 235.

*Picumnus laurencii* CORY, Bull. Nutt. Orn. Club, vi, July, 1881, 129, pl. 1 (Haiti; coll. C. B. Cory), 153 (Jacmé and Petiónville, Haiti); Birds Haiti and San Dom., 1884, pl. [14].—REICHENOW and SCHALOW, Journ. für Orn., 1882, 214 (reprint of orig. descr.).

*Picumnus laurencei* CORY, Birds Haiti and San Dom., 1884, 109.—VERRILL (A. E. and A. H.), Proc. Ac. Nat. Sci. Phila., 1909, 360 (Sanchez and Samaná, Santo Domingo).

*[Picumnus] laurencei* CORY, List Birds West Ind., 1885, 19; revised ed., 1886, 19.

<sup>a</sup> Ten specimens.



## Superfamily CAPITONES.

## THE BARBETS AND HONEY GUIDES.

> *Rhamphastidae* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 348 (includes Ramphastides).

< *Capitones* SHARPE, Rev. Rec. Att. Classif. Birds, 1891, 83; Hand-list, ii, 1900, 177 (excludes Indicatoridæ).

= *Capitonidæ* GADOW, in Bronn's Thier-Reich, Vög., 1893, 266, 301; Classif. Vertebr., 1898, 37.—BEDDARD, Struct. and Classif. Birds, 1898, 192.

Aegithognathous or (in some Capitonidæ) desmognathous Scansores with the vomer single, bifurcate; cervical hæmapophysis single, sharp, channeled; spina externa sterni moderately long, not forked; clavicles separated (not ankylosing into a furculum); manubrial process pointed; cæca absent; femoro-caudal and accessory semitendinosus muscles present, ambiens and accessory femoro-caudal muscles absent; oil-gland tufted; contour feathers with aftershaft, and bill not highly specialized.

## KEY TO THE FAMILIES OF CAPITONES.

- a. Ventral pteryla forked on side of breast; wing rounded, with ten relatively short primaries, the longest of which exceed secondaries by much less than length of culmen; fifth to sixth primaries longest; outermost primary small, much less than half as long as longest; nostrils bored directly into the horny rhinotheca (no nasal fossæ); bill relatively much larger, broader, or deeper (usually both) basally, the culmen less convex; conspicuous, elongated, frontal bristles; plumage usually bright and varied (usually with red, orange, yellow, green, or blue, often several of these hues combined and strongly contrasted), the sexes more or less different in coloration.....*Capitonidæ*<sup>a</sup> (p. 311).
- aa. Ventral pteryla not forked on side of breast; wing long and pointed, with nine primaries, the longest of the latter exceeding secondaries by more than twice the length of culmen; four outermost primaries (sixth to ninth) longest, the outermost (ninth) nearly to quite equal to longest; nostrils in center of large nasal fossæ, surrounded by broad membrane; bill relatively much smaller, narrower and less deep basally, the culmen more strongly convex; plumage plain or dull, without bright hues (except, sometimes, yellow), the sexes alike in coloration.....*Indicatoridæ* (extralimital).<sup>b</sup>

<sup>a</sup> The above external characters taken chiefly from the American genera.

<sup>b</sup> = *Indicatorinæ* Swainson, Classif. Birds, ii, 1837, 325; Bonaparte, Prodr. Syst. Orn., 1840, 17; Consp. Av., i, 1850, 100; Cabanis and Heine, Mus. Hein., iv, heft i, 1863, 1; Gadow, Bronn's Thier-Reich, Vög., ii, 1891, 267, 301. = *Indicatoridæ* Stejneger, Stand. Nat. Hist., iv, 1885, 412, 421, in text; Fuerbringer, Unters. Morph. Syst. Vög., ii, 1888, 1389; Sharpe, Hand-list, ii, 1900, 176. = *Indicatores* Sharpe, Rev. Rec. Att. Classif. Birds, 1891, 83; Hand-list, ii, 1900, 176.

A rather small group, of about eighteen species and four genera, mostly confined to Africa, two species (of the typical genus *Indicator*) occurring in the Himalaya Mountains and the Malay Peninsula and Borneo respectively.

The above diagnosis is taken from the genera *Indicator* and *Melignothos* alone, the other two genera (*Prodotiscus* Sundevall and *Melignomon* Reichenow) not being available for examination in this connection.

## Family CAPITONIDÆ.

## THE BARBETS.

- =*Bucconidæ* BONAPARTE, Consp. Av., i, Jan., 1850, 141.  
 =*Capitonidæ* (not of Bonaparte, 1850)<sup>a</sup> SCLATER, Cat. Am. Birds, 1862, 329; Ibis, 1880, 341.—HUXLEY, Proc. Zool. Soc. Lond., 1867, 466.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 108.—GARROD, Proc. Zool. Soc. Lond., 1874, 117.—FORBES, Ibis, 1884, 120.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1389.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 547.—SHARPE, Hand-list, ii, 1900, 177.  
 =*Megalæminæ* SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1873, 75 (English translation, 1889, 147).  
 =*Megalainidæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 412, 418, in text.  
 =*Capitoninæ* CABANIS, Wiegmann's Archiv für Naturg., 1847, i, 348.—GADOW, Bronn's Thier-Reich, Vög., ii, 1891, 267, 301.  
 =*Capitones* SHARPE, Rev. Classif. Birds, 1891, 83; Hand-list, ii, 1900, 177.

Small to large Capitones with the ventral pteryla forked on side of breast as well as on throat; nostril bored directly into the horny rhinotheca (without surrounding or contiguous nasal fossæ); primaries relatively short, the longest exceeding secondaries by much less than length of culmen, the wing-tip rounded (fifth to seventh primaries longest), the tenth (outermost) primary much less than half as long as the eighth, often not more than half as long as ninth; bill stout to very stout, subconical, broad and deep basally, compressed terminally, the culmen never very strongly convex; tail decidedly less to slightly more than two-thirds as long as wing, consisting of ten rectrices, more or less rounded, the outermost pair of rectrices a little less than two-thirds to decidedly more than three-fourths as long as middle pair, the rectrices moderately firm, all normally broadly rounded at tip; tarsus equal to or (usually) longer than culmen, decidedly longer than longest toe with claw, stout, very distinctly scutellate, the scutellation holaspidean; anterior toes united or coalesced for whole of basal phalanx, the inner (without claw) reaching to about base of third phalanx of the outer toe; outer posterior toe about as long as outer anterior toe, the inner hind toe about half as long as the outer, or slightly less; latero-frontal (post-nasal) region with several long, antrorse, hairlike bristles, the rictal region and chin also with similar but less strongly developed bristles; orbital region sometimes partly naked.

The Barbets are a very homogeneous group of "scansorial" "picarian" birds, related to both the Woodpeckers (Picidæ) and the Toucans (Ramphastidæ), from both of which they differ in anatomical characters as tabulated on page 2.

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<sup>a</sup> =*Bucconidæ*.

The Capitonidæ are forest birds, living mostly among the tree tops, where they feed on fruits, berries, and insects and, some species at least, nest in holes in trees and lay pure white eggs. Some kinds are said to run up and down trunks of trees, though in a different manner from the Woodpeckers.

As a rule, they are birds of beautiful, or at least gaudy, plumage, the coloration consisting of strongly (but not always harmoniously) contrasting areas of several of the spectrum hues (blue, green, yellow, orange, and red), usually with more or less of black. Often the two sexes, while equally bright or showy in coloration, are yet so different in their colors as to have often been described as distinct species.

Unlike the Toucans, the Barbets are not confined to the American Tropics. In fact, they are poorly represented there, being far more numerous in tropical Asia and Africa. In America only four genera, with about eighteen species, are known to occur, about seven times as many genera and nearly seven times as many species being found in the Eastern Hemisphere.<sup>a</sup>

"They are birds mostly of a bright green plumage, some of them variegated, especially on the head, with scarlet, violet, blue, or yellow, though others are plainly colored. All of them seem to live chiefly on fruit, but insects occasionally form part of their food, and in captivity they become carnivorous. They breed in holes of trees, laying white eggs, and most, if not all, of them utter a clear ringing note so loud as to attract general attention." (NEWTON, Dictionary of Birds, Part I, p. 28.)

"Although the limits of this family appear to be well defined, the characters used for the separation of genera are by no means easy to distinguish, and in any case they are difficult to formulate. The *Capitonidæ* appear to me to constitute a family of Picarian birds in which no single character for the separation of genera can be considered to be absolute, and even style of coloration is of no avail as a generic character. As a rule, the plumage is gaudy and the contrasts striking; but there are some genera, such as *Calorhamphus* and *Gymnobucco*, which it would be difficult to match for dullness of coloration. Scarcely one of the genera admitted here is so well defined that it does not form a link toward some other genus, and *Pogonorhynchus* and its allies may well be considered as subgenera

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<sup>a</sup> In Sharpe's "Hand-list of the Genera and Species of Birds," ii, 1900, 177-187, nineteen genera and one hundred and twenty-two species of Capitonidæ are listed as peculiar to the Old World. Of these, eleven genera and eighty-two species are found in Africa only, while eight genera and forty species occur only in southern Asia and the Indo-Malayan region.



belonging to one leading type, of which the toothed bill is the most prominent feature. The same may be said of *Barbatula* and *Smilorhis*, and *Megalæma* and *Cyanops*." (SHELLEY, Cat. Birds Brit. Mus., Vol. XIX, p. 13.)

The authors of a beautiful monograph of the family, Messrs. C. H. T. and G. F. L. Marshall, have divided the Capitonidæ into three subfamilies, Pogonorhynchinæ, Megalæminæ, and Capitoninæ, but later writers ignore these subdivisions.

KEY TO THE AMERICAN GENERA OF CAPITONIDÆ.

- a. Tomia smooth, without distinct, if any, subterminal notch or denticulation; tip of mandible simple (normal); bill more slender, its width at base less than length of maxilla from nostril; mesorhinium broadly rounded or flattened; tail very little more (often less) than two-thirds as long as wing, the outermost pair of rectrices two-thirds to more than three-fourths as long as middle pair; adult males without a nuchal tuft; sexes distinctly different in coloration.
  - b. Bill more slender; nostrils narrower, separated by a much narrower mesorhinium; tail more than two-thirds as long as wing, the outer pair of rectrices much less than three-fourths as long as middle pair; outermost (tenth) primary about half as long as ninth, relatively broad; back, etc., plain green; sexes with coloration of head and neck very different.....**Eubucco** (p. 314).
  - bb. Bill stouter; nostrils circular, separated by a much broader mesorhinium; tail less than two-thirds as long as wing, the outer pair of rectrices nearly to more than three-fourths as long as middle pair; outermost (tenth) primary much less than half as long as ninth, relatively very narrow; back, etc., black, streaked, etc., with yellow or orange (or both), or plain glossy blue-black; sexes with coloration of head not essentially different (except, sometimes, throat).  
**Capito** (p. 319).
- aa. Maxillary tomium conspicuously notched and toothed subterminally; tip of mandible bifurcate; bill stouter, its width at base greater than length of maxilla from nostril; mesorhinium narrowly ridged; tail much more than two-thirds as long as wing, the outer pair of rectrices less than two-thirds as long as middle pair; adult males with a nuchal tuft of elongated, glossy black feathers, the sexes otherwise alike in coloration.
  - b. Lateral base of maxilla more swollen; mesorhinium less distinctly ridged; middle toe, without claw, much more than two-thirds as long as tarsus; outermost rectrices slightly more than half as long as middle pair; coloration much more varied, the chest bright red, pileum glossy black with a white spot on each side of occiput.....**Semnornis** (extralimital).<sup>a</sup>
  - bb. Lateral base of maxilla less swollen; mesorhinium more distinctly ridged; middle toe, without claw, not more than two-thirds as long as tarsus; outermost rectrices nearly two-thirds as long as middle pair; coloration plain, without red, glossy black (except nuchal tuft of adult male), or white.

**Dicrorhynchus** (p. 324).

<sup>a</sup> *Tetragonops* (not of Gerstæcker, February or March, 1855) Jardine, Edinburgh Philos. Journ., n. s., ii, no. 2, October, 1855, 404 (type, *T. ramphastinus* Jardine).—*Pan* (not of Oken, 1816) Richmond, Auk, xvi, January, 1899, 77 (to replace *Tetragonops* Jardine, preoccupied).—*Semnornis* Richmond, Auk, xvii, April, 1900, 179 (to replace *Pan* Richmond, preoccupied).

A monotypic genus, the single known species of which is confined to eastern Ecuador.

## Genus EUBUCCO Bonaparte.

*Eubucco* BONAPARTE, Consp. Av., i, 1850, 142. (Type, *Capito richardsoni* Gray.)

*Abelterus*<sup>a</sup> HEINE, in Heine and Reichenow, Nom. Mus. Hein. Orn., 1890, 227.

(New name to replace *Eubucco* Bonaparte on grounds of purism.)

Rather small Capitonidæ (length about 130–160 mm.) with rather slender, compressed bill, relatively narrow mesorhinium, oval to nearly linear nostrils, tail less than two-thirds as long as wing, outermost (tenth) primary broad and about half as long as ninth, back, etc., plain green or olive-green, the sexes with coloration of head and neck radically different.

Bill about as long as head, rather slender (its depth at nostril equal to not more than half the length of exposed culmen), very much broader than deep at base (width at base at least one and a half times as great as depth at same point), compressed anteriorly; culmen rounded (or at least not distinctly ridged), nearly straight for basal half or more, gently convex terminally, the tip of maxilla pointed and more or less strongly decurved, but not uncinat; gonys about as long as mandibular rami or slightly longer, nearly straight, ascending terminally, not ridged; lateral base of maxilla more or less tumid or turgid, especially the upper-posterior margin; tomia perfectly smooth, the maxillary tomium rather strongly though gradually deflected basally. Nostril small, more or less narrow, partly concealed by, or at least in contact with (posteriorly) feathering of frontal antiæ, from which spring several rather long but very slender antrorse bristles, the chin and rictal region with similar but rather smaller bristles. Orbital region partly naked. Wing rather short, very concave beneath, much rounded; longest primaries exceeding secondaries by much less than length of exposed culmen, the sixth and seventh or fifth, sixth, and seventh primaries longest, eighth shorter than fourth (sometimes shorter than second), ninth much shorter than first, the tenth (outermost) about half as long as ninth, normally broad. Tail more than two-thirds as long as wing, the outermost pair of rectrices more than half to slightly more than two-thirds as long as middle pair. Tarsus slightly shorter to longer than culmen (from base), decidedly longer than longest toe with claw.

*Coloration*.—Above (except sometimes head and neck) plain green (varying from bluish green to olive-green), under parts with more or less of yellow, the flanks striped with green or greenish dusky; adult males with at least pileum red and a bluish band across hindneck; adult females without red on head.

*Range*.—Costa Rica to Bolivia and eastern Peru. (About eight species and subspecies.)

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<sup>a</sup> Ἀβέλτερος, silly, stupid. (Richmond.)

## KEY TO THE SPECIES AND SUBSPECIES OF EUBUCCO.

- a. Pileum and auricular region red (more or less bright). (*Adult males.*)
- b. Malar region red, like pileum and throat; no red or orange pectoral patch.  
(*Eubucco bourcieri.*)
- c. Red of foreneck extending over median portion of chest and breast to upper abdomen, the color on each side of this sulphur yellow. (Central Colombia.)  
**Eubucco bourcieri bourcieri**, adult male (extralimital).<sup>a</sup>
- cc. Red of foreneck not extending farther backward than chest, the whole chest and breast yellow or tawny-orange (sometimes passing into sulphur yellow laterally).
- d. Breast and chest sulphur yellow (sometimes tawny-orange medially); green of back, etc., more olivaceous. (Eastern Ecuador.)  
**Eubucco bourcieri shelleyi**, adult male (extralimital).<sup>b</sup>
- dd. Chest and breast wholly dull orange or tawny-orange; green of back, etc., purer (less olivaceous).
- e. Chest and breast more deeply orange or tawny-orange; wing averaging 73.1, tail 48.6, exposed culmen 19.3, tarsus 21.5, outer anterior toe 15.9. (Western Ecuador to northwestern Colombia.)  
**Eubucco bourcieri æquatorialis**, adult male (extralimital).<sup>c</sup>
- ee. Chest and breast lighter orange or tawny-orange; wing averaging 71, tail 47.7, exposed culmen 19, tarsus 20, outer anterior toe 15.3. (Costa Rica and western Panama.) . . . **Eubucco bourcieri salvini**, adult male p. 317).

<sup>a</sup> *Micropogon bourcieri* Lafresnaye, Rev. Zool., viii, May, 1845, 179 (Bogota, Colombia; =adult male); Rev. et Mag. de Zool., i, 1849, 116, pl. 4.—*Capito bourcierii* Gray, Gen. Birds, ii, March, 1846, 430.—*Capito bourcieri* Sclater, Proc. Zool. Soc. Lond., 1854, 115; Marshall, Mon. Capit., 1871, 165, pl. 66; Shelley, Cat. Birds Brit. Mus., xix, 1891, 118, pl. 5, fig. 6.—*Capito bourcierii* Goffin, Mus. Pays-Bas, i, Buccones, 1863, 58.—[*Eubucco*] *bourcieri* Bonaparte, Consp. Av., i, 1850, 142 (Colombia).—*Micropogon hartlaubii* Lafresnaye, Rev. Zool., viii, May, 1845, 180 (Bogota, Colombia; =adult female); Rev. et Mag. de Zool., i, 1849, 176, pl. 6.—*Capito hartlaubi* Gray, Gen. Birds, ii, March, 1846, 430.—*Capito hartlaubi* Sclater, Proc. Zool. Soc. Lond., 1854, 115.—*Capito hartlaubii* Goffin, Mus. Pays-Bas, i, 1863, 61.—[*Eubucco*] *hartlaubi* Bonaparte, Consp. Av., i, 1850, 142 (Bogotá).—*Capito capistratus* Eyton, Jardine's Contr. Orn. for 1849 (pub. 1850?), 131 (no locality given; types in coll. T. C. Eyton and Knowsley Mus.).—*Megalaima capistratus* Eyton, Jardine's Contr. Orn., 1850, 29, pl. 45.

<sup>b</sup> *Capito shelleyi* Dalmas, Bull. Soc. Zool. France, 1900, 175 (Napo, e. Ecuador). An adult male from Napo in the collection of the American Museum of Natural History agrees with Dalmas' description except that the median portion (broadly) of the breast and upper abdomen are tawny-orange.

<sup>c</sup> *Eubucco bourcieri* (not *Micropogon bourcieri* Lafresnaye) Sclater, Proc. Zool. Soc. Lond., 1859, 146 (Pallatanga, Ecuador); 1860, 95 (Nanegal, Ecuador), 297 (Esmeraldas, Ecuador).—*Capito bourcieri* Sclater, Ibis, 1861, 188, part (Esmeraldas; Nanegal); Salvin, Ibis, 1870, 111, 112, part (Ecuador); Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1883, 573 (Chimbo, Ecuador); Shelley, Cat. Birds Brit. Mus., xix, 1891, 118, part (Intac, Esmeraldas, and Nanegal, Ecuador).—*Capito æquatorialis* Salvadori and Festa, Boll. Mus. Zool., etc., Torino, xv, no. 368, Feb. 19, 1900, 22 (Intac, w. Ecuador; coll. Mus. Zool., etc., Turin).—*Capito* *bourcieri* *æquatorialis* Menegaux, Bull. Soc. Philom., 1908, 4, in text (Gualea, w. Ecuador).

I am not at all sure that the birds from northwestern Colombia (San Antonio, Rio Cali) really belong to *E. b. æquatorialis*, not having been able to compare them with specimens from western Ecuador.



bb. Malar region (broadly) yellow or blue; a red or orange patch on breast.

c. Malar region light blue. (Peru and Bolivia.)

**Eubucco versicolor**, adult male (extralimital).<sup>a</sup>

cc. Malar region yellow.

d. Lower (as well as upper) throat red, margined posteriorly with blue, this by a narrow band of orange. (Eastern Peru.)

**Eubucco glaucogularis**, adult male (extralimital).<sup>b</sup>

dd. Lower throat entirely yellow.

e. Collar across lower hindneck light blue or pale bluish gray.

f. Pileum and auricular region bright red; collar light blue. (Eastern Peru.)

**Eubucco steerii**, adult male (extralimital).<sup>c</sup>

ff. Pileum and auricular region dark crimson; collar pale hoary gray. (*Eubucco richardsoni*.)

g. Chin dark crimson. (Eastern Ecuador.)

**Eubucco richardsoni richardsoni**, adult male (extralimital).<sup>d</sup>

gg. Chin dull black. (Central Colombia.)

**Eubucco richardsoni granadensis**, adult male (extralimital).<sup>e</sup>

ee. Collar across lower hindneck greenish yellow. (Upper Amazon Valley.)

**Eubucco aurantiicollis**, adult male (extralimital).<sup>f</sup>

aa. Pileum and auricular region not red, the latter either grayish blue or blackish. (*Adult females*.)

b. Throat yellowish; breast not green or blue; an orange or yellow band (more or less broad) across upper chest.

<sup>a</sup> *Bucco versicolor* Müller, Syst. Nat. Suppl., 1776, 88 (Maynas, e. Peru; based on *Le Barbu des Maynas* Buffon, Pl. Enl., pl. 330).—*Capito versicolor* Gray, List Capit. and Pict., Brit. Mus., 1868, 21; Shelley, Cat. Birds Brit. Mus., xix, 1891, 116.—*Bucco pictus* Boddaert, Tabl. Pl. Enl., 1783, 20 (based on Pl. Enl., pl. 330).—*Eubucco pictus* Sclater, Proc. Zool. Soc. Lond., 1857, 268.—*Capito pictus* Sclater, Ibis, 1861, 187.—[*Bucco*] *elegans* Gmelin, Syst. Nat., i, pt. 1, 1788, 406 (based on Pl. Enl., pl. 330; etc.).—[*Eubucco*] *elegans* Bonaparte, Consp. Av., i, 1850, 142.—*Capito maynalensis* Vieillot, Nouv. Dict. d'Hist. Nat., iv, 1816, 497 (based on Pl. Enl., pl. 330).—*C[apito] maynanensis* Gray, Gen. Birds, ii, 1846, 430.

<sup>b</sup> *Capito glaucogularis* Tschudi, Wiegmann's Archiv für Naturg., 1844, 301; Fauna Peruana, Aves, 1845, 259, pl. 24, fig. 2; Marshall, Mon. Capit., 1871, 169, pl. 67; Shelley, Cat. Birds Brit. Mus., xix, 1891, 117.—[*Micropogon*] *glaucogularis* Bonaparte, Consp. Av., i, 1850, 142.—*Eubucco glaucogularis* Sclater, Proc. Zool. Soc. Lond., 1857, 268.—*Capito tschudii* Sclater, Ibis, iii, April, 1861, 188 (Eastern Peru; coll. Mus. Bremen).

<sup>c</sup> *Capito steerii* Sclater and Salvin, Proc. Zool. Soc. Lond., 1878 (pub. June 1), 140, pl. 12 (Moyobamba, e. Peru; coll. Mus. Univ. Michigan); Shelley, Cat. Birds Brit. Mus., xix, 1891, 116, pl. 5, fig. 2.

<sup>d</sup> *Capito richardsoni* Gray, Gen. Birds, ii, March, 1846, pl. 106; Marshall, Mon. Capit., 1871, 173, pl. 69; Shelley, Cat. Birds Brit. Mus., xix, 1891, 114, pl. 5, fig. 3.—[*Eubucco*] *richardsoni* Bonaparte, Consp. Av., i, 1850, 142.—*Capito sulphureus* Eyton, Jardine's Contr. Orn., 1849, 130 (no locality; coll. Derby Mus.).

<sup>e</sup> *Capito granadensis* Shelley, Cat. Birds Brit. Mus., xix, 1891, 115, pl. 5, fig. 5 (Bogota, Colombia; coll. Brit. Mus.).

<sup>f</sup> *Eubucco aurantiicollis* Sclater, Proc. Zool. Soc. Lond., 1857 (pub. Jan. 28, 1858), 267 (Rio Javari, e. Peru; coll. P. L. Sclater).—*Capito aurantiicollis* Sclater, Ibis, 1861, 119 (monogr.); Marshall, Mon. Capit., 1871, 175, pl. 70; Shelley, Cat. Birds Brit. Mus., xix, 1891, 115.—*Capito auratus aurantiicollis* Hellmayr, Novit. Zool., xiv, 1907, 82 (range; descr.; crit.).—*Eubucco hartlaubi* (not *Micropogon hartlaubi* Lafresnaye) Sclater, Proc. Zool. Soc. Lond., 1857, 267.—*Capito melanotis* (not of Temminck, 1830) Sclater and Salvin, Proc. Zool. Soc. Lond., 1866, 196.

c. Auricular region grayish blue; anterior portion of forehead blackish, the rest of pileum golden olive, sometimes with a grayish blue band across posterior portion of forehead; chin blackish. (*Eubucco bourcieri*.)

d. A distinct band of grayish blue across posterior portion of forehead.

**Eubucco bourcieri bourcieri**, adult female (extralimital).

**Eubucco bourcieri shelleyi**, adult female (extralimital).

dd. No distinct (if any) blue band across forehead.

**Eubucco bourcieri æquatorialis?**, adult female (extralimital).

**Eubucco bourcieri salvini**, adult female (p. 318.)

cc. Auricular region blackish; anterior portion of forehead grayish, not very different from dull olive of crown, etc.; chin dull whitish.

d. Supra- and post-auricular streak orange or orange yellow; upper chest deep orange.....**Eubucco aurantiicollis**, adult female (extralimital).

dd. Supra- and post-auricular streak and upper chest yellow.

**Eubucco richardsoni**, adult female (extralimital).

bb. Throat light blue, like auricular region and forehead; breast bluish green or greenish blue; no orange or yellow band across upper chest, but a narrow bar of bright red across lower foreneck.

**Eubucco versicolor**, adult female (extralimital).

**Eubucco glaucogularis**, adult female (extralimital).<sup>a</sup>

### EUBUCCO BOURCIERI SALVINI (Shelley).

#### SALVIN'S BARBET.

Adult male identical in coloration with that of *E. b. bourcieri*,<sup>b</sup> but adult female differing from that of the typical form in absence of any grayish blue band across forehead, and much brighter (more golden or saffron yellowish) color of crown.

*Adult male*.—Lores and chin (sometimes part of orbits and extreme anterior point of malar region also) dull blackish; rest of head, all round, plain bright red (nearly carmine on pileum, slightly paler, more poppy red, on throat), the red usually invading the foreneck, often tinging the chest; a bar of bluish white across side of neck, immediately behind red of head; upper parts (except as described) plain dull green, more olive-green on hindneck and on outer webs of remiges, the inner webs of the latter dusky; underparts passing from dull orange or saffron yellow on chest (where often tinged with red) through sulphur or citron yellow on abdomen to yellowish white on flanks, anal region, and under tail-coverts, the sides and flanks broadly, the under tail-coverts more narrowly, striped with dull greenish; bill light brownish yellow (in dried skins); iris red; legs and feet dusky grayish in dried skins (olive-greenish in life?); length (skins), 132–157 (147); wing, 67.5–74 (71); tail, 44.5–51.5 (47.7); exposed culmen, 17–20.5 (19); tarsus, 18.5–22 (20); outer anterior toe, 14–16 (15.3).<sup>c</sup>

<sup>a</sup> An adult female of *E. glaucogularis* (one of Tschudi's original specimens, received in exchange from the Museum of Neuchatel) is so closely similar to an adult female identified as *E. versicolor* from Idma, Peru (Kalinowski, collector), that the only obvious difference consists in the slightly more bluish green of the breast.

<sup>b</sup> See p. 315.

<sup>c</sup> Twenty specimens.

*Adult female*.—Forehead (broadly), lores, and chin dull black; rest of pileum olive-greenish, but this overlaid by a wash of ocher yellow or dull saffron yellow (on tips of feathers), the latter color more pronounced on fore part of crown, where sometimes forming a conspicuous though not sharply defined patch; bar across side of neck saffron yellow or ocher yellow; auricular and suborbital regions, anterior part of malar region, and a narrow superciliary spot light grayish blue, the terminal portion of auricular region (next to saffron yellow or orange neck bar) more dusky; throat light grayish yellow, followed by a broad band across foreneck or upper chest of saffron yellow or orange; rest of plumage as in adult male, but chest usually olive yellow (rarely tinged with saffron yellow); bill, etc., as in adult male; length (skins), 130–153 (142); wing, 67–72 (68.9); tail, 44–49 (46.6); exposed culmen, 17–20 (18.7); tarsus, 19.5–21 (20); outer anterior toe, 14–15.5 (15).<sup>a</sup>

*Immature male*.—Similar to the adult male but red of pileum intermixed with olive-green feathers (the occiput and nape sometimes wholly olive green), that of the throat much duller, showing light grayish bases to feathers.

*Young female*.—Similar to the adult female but colors duller, with differently colored areas not so strongly contrasted, and orange or saffron-yellow chest band obsolete or faintly indicated.

Costa Rica (Turrialba; Jiménez; Carrillo; La Estrella, Navarro, Azahár, and Birris, Cartago; Orósi; Cervantes; Guayabo; Tobosi; Cariblanco de Sarapiquí; San José; Barranca, Volcan de Poás; Térraba; Laguaría and Los Reyes, Dota) and western Panamá (Chitra; Calobre; Boquete; Volcan de Chiriquí; El Banco; Lomo Lleno).

*Capito bourcierii* (not of Lafresnaye, 1845) SALVIN, Proc. Zool. Soc. Lond., 1870, 212 (Volcan de Chiriqui, Panama); Ibis, 1870, 111 (Costa Rica; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 130 (Barranca and Turrialba, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 363 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 47 (Orosi and Navarro, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 126 (Navarro de Cartago, Birris de Cartago, and Jiménez, Costa Rica).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 49 (Térraba, Costa Rica).

[*Capito*] *bourcierii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 110, part (Veragua; Costa Rica).

<sup>a</sup> Eighteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Costa Rica .....	71.1	48.4	19	19.9	15.1
Ten adult males from Panama .....	70.8	47	19.1	20.4	15.4
FEMALES.					
Nine adult males from Costa Rica .....	68.8	46.7	18.7	20	15.2
Nine adult females from Panama .....	69	46.6	18.7	20.1	14.9



*Capito hartlaubi* (not of Lafresnaye, 1845) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 130 (Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 363 (Costa Rica).

*Capito salvini* SHELLEY, Cat. Birds Brit. Mus., xix, 1891, 119, pl. 5, fig. 4 (Panama to Costa Rica; coll. Brit. Mus.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 549 (Barranca, Turrialba, Navarro de Cartago, Birris and Jiménez, Costa Rica; Volcan de Chiriqui).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 32 (Boquete and Volcan de Chiriqui, 4000–5000 ft.).

*Capito bourcierii salvini* CARRIKER, Ann. Carnegie Mus., vi, 1910, 570 (Costa Rica; crit.).

### Genus CAPITO Vieillot.

*Capito* VIEILLOT, Analyse, 1816, 27. (Type, *Tamatia à tête et gorge rouge* Buffon=*Bucco cayannensis* Gmelin=*B. niger* Müller.)

*Nystastes* GLOGER, in Froriep's Notizen, xvi, 1827, 277. (Type, *Bucco niger* Müller.)

*Mycropogon* (not *Micropogon* Boie, 1826) TEMMINCK, Pl. Col., livr. 83, Feb., 1830; livr. 101–102, 1839, Tabl. Méth., p. 55. (Type, *Bucco cayanneusis* Gmelin=*B. niger* Müller.)

*Micropogon* (emendation?) TEMMINCK, Pl. Col., livr. 101–102, 1839, Tabl. Méth., p. 55.

*Ablas a* BILLBERG, Synop. Faunæ Scand., i, pars. 2, 1828, tab. A. (New name for *Capito* Vieillot.)

Similar to *Eubucco* but bill relatively shorter and much stouter, nostrils circular, mesorhinium much broader, tail less than two-thirds as long as wing, with outermost rectrices relatively much longer, outermost (tenth) primary much narrower and relatively shorter, and style of coloration very different, the back, etc., never plain green, but black (plain olive in one species), usually streaked and otherwise variegated with yellow or orange, and the sexes alike except in coloration of underparts.

Bill shorter than head, subconical, moderately compressed anteriorly, broad and depressed basally (width at base about one and a half times its depth at same point), the culmen gradually decurved from near base, indistinctly ridged terminally, broadly rounded or flattened basally (on mesorhinium); gonys about as long as mandibular rami (sometimes slightly longer), straight or faintly convex, ascending terminally, indistinctly ridged (more distinctly so terminally); tomia smooth, the maxillary tomium more or less strongly concave anteriorly, gradually but strongly deflexed and more or less convex posteriorly. Nostril small, circular, exposed. Latero-frontal antiæ with several slender antrorse bristles projected forward over nostrils, the rictus and chin with similar but smaller bristles. Orbital region partly (usually for greater part) naked. Wing short, very concave beneath, the longest primaries exceeding secondaries by much less than length of exposed culmen; sixth and seventh, fifth, sixth, and seventh, or fourth to seventh primaries longest, the eighth a little shorter, the ninth shorter than first, the tenth (outermost) less

than half as long as ninth and relatively much narrower. Tail less than two-thirds as long as wing, the outermost pair of rectrices nearly to more than three-fourths as long as middle pair. Tarsus about as long as culmen (from base), also about as long as longest toe with claw.

*Coloration*.—Back and wing coverts black, usually streaked or otherwise variegated with yellowish or whitish; sides of head black (usually streaked with whitish in females) or (in one species) plain olive; adult males with throat and malar region plain red, orange, orange yellow, or black, the chest plain light yellow or black; adult females with chest spotted with black, or else (together with throat) plain white, passing into yellow on breast.

*Range*.—Eastern Panama to eastern Peru, Bolivia, and Cayenne. (About eight species.)

KEY TO THE SPECIES OF *CAPITO*.<sup>a</sup>

- a. Throat red, orange, yellow, or white; chest orange, yellow, white, or brown.
- b. Throat not white.
- c. Forehead (distinctly and abruptly) red, like throat. (*Capito niger*.)
- d. Breast immaculate pale yellow or yellowish white. (Guiana, Surinam, and Cayenne).....*Capito niger*, adult male (extralimital).<sup>b</sup>
- dd. Breast heavily spotted with black...*Capito niger*, adult female (extralimital).

<sup>a</sup> In order to facilitate their identification as well as to show their relationships, nearly all the forms of the genus known at the present time are included in the "key." The *C. auratus* group is involved in great confusion, and it is very difficult to determine what names certain forms should bear, especially two of the three which occur in the Upper Amazon Valley. One of these seems to be the bird described and figured by Levaillant (Hist. Barbus, pl. 27) as *Le Barbu orangé de Pérou*, and therefore I have adopted the first specific name based on the same (*peruvianus* Cuvier).

Not counting *C. aurantiicinctus* Dalmas, which I have not seen, nor *C. auratus intermedius* Berlepsch and Hartert, which is also autoptically unknown to me, there are certainly four clearly defined forms of the group; and since these do not occupy separate areas, or at least overlap in their ranges, they can not be subspecies, nor can *C. aurantiicinctus* very well be a subspecies, as claimed by Berlepsch and Hartert, since true *C. auratus* occurs in the same district—at least I am not able to distinguish in any way four adult males from the upper Rio Caura, in the collection of the American Museum of Natural History, from examples of *C. auratus* from Colombia, Peru, and Ecuador.

With reference to *C. aurantiicinctus*, which seems to differ from *C. aurantiiventris* mainly in its orange instead of scarlet throat, see the following: *Capito aurantiicinctus* Dalmas, Bull. Soc. Zool. France, 1900, 177 (Rio Caura, s. Venezuela); *Capito auratus aurantiicinctus* Berlepsch and Hartert, Novit. Zool., ix, April, 1902, 99 (Nicare, Venezuela; crit.).

<sup>b</sup> *Bucco niger* Müller, Syst. Nat. Suppl., 1776, 89 (based on *Le Barbu de Guayane* Daubenton, Pl. Enl., pl. 206, fig. 1).—*Capito niger* Marshall, Mon. Capit., 1871, 157, pl. 63; Shelley, Cat. Birds Brit. Mus., xix, 1891, 111.—(?) *Bucco maculatus* Müller, Syst. Nat. Suppl., 1776, 89 (based on Daubenton, Pl. Enl., pl. 206, fig. 2).—*Bucco erythrocephalus* Boddaert, Tabl. Pl. Enl., 1783, 12 (based on Pl. Enl., pl. 206, fig. 1).—[*Bucco*] *cayennensis* Gmelin, Syst. Nat., i, pt. i, 1788, 405 (based on *Bucco cayennensis* Brisson, Orn., iv, 95, *Barbu de Cayenne*, Pl. Enl., pl. 206, fig. 1; etc.).—*Capito cayennensis* Vieillot, Nouv. Dict. d'Hist. Nat., iv, 1816, 500.—[*Bucco*] *cayanensis* Latham, Index Orn., i, 1790, 202.—[*Capito*] *rubricollis* Vieillot, Enc. Méth., iii, 1823, 1426 (based on *Barbu de Cayenne* Brisson, etc.).—[*Mycropogon*] *nævius* Temminck, Pl. Col., iii, livr. 83, Feb., 1830, in text to Genus *Mycropogon*, p. 2 (based on *Bucco nævius* Daubenton, Pl. Enl., pl. 206, fig. 2; etc.).—[*Capito*] *nævius* Gray, Gen. Birds, ii, 1846, 430.

cc. Forehead dull yellowish, dull orange, or brownish (sometimes tinged with orange or orange-red), not distinctly different from color of crown.

d. Throat orange-red or red-orange.

e. Forehead strongly tinged with orange-red; rump streaked with sulphur yellow; abdomen and flanks pale yellow or yellowish white. (Eastern Ecuador; eastern Peru?). (*Capito peruvianus*?).<sup>a</sup>

f. Breast immaculate light yellow.

*Capito peruvianus*?, adult male (extralimital).

ff. Breast heavily spotted or broadly streaked with black.

*Capito peruvianus*?, adult female (extralimital).

ee. Forehead dull yellowish, very slightly, if at all, tinged with orange-red; rump streaked with golden yellow or orange; abdomen and flanks crossed by a broad band of orange or orange-yellow. (Eastern Peru.) (*Capito aurantiiventris*).<sup>b</sup>

f. Breast immaculate light yellow.

*Capito aurantiiventris*, adult male (extralimital).

ff. Breast heavily spotted with black.

*Capito aurantiiventris*, adult female (extralimital).

dd. Throat yellowish orange or orange-yellow.

e. Sides and flanks light yellow, streaked or spotted (more or less) with black; back, etc., black, varied with light yellow. (Colombia to the Guianas and eastern Peru.) (*Capito auratus*.)

f. Pileum olive-yellowish; remiges and retrices slate-dusky. (Colombia to the Guianas and eastern Peru.) (*Capito auratus auratus*.)

g. Breast immaculate pale yellow.

*Capito auratus auratus*, adult male (extralimital).<sup>c</sup>

<sup>a</sup> (?) [*Bucco peruvianus* Cuvier, Règne Anim., i, 1817, 428, footnote (Peru; based on *Le Barbu orangé de Pérou* Levaillant, Barbus, pl. 27).—*C[apito] peruvianus* Gray, Gen. Birds, ii, 1846, 430.—*Capito peruvianus* Sclater, Cat. Am. Birds, 1862, 329, part.—*[Micropogon] peruvianus* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 12).—(?) *M[ycropogon] aureus* Temminck, Pl. Col., livr. 83, Feb., 1830 (vol. iii), text to Genus *Mycropogon*, p. 2 (based on *Le Barbu orangé de Pérou* Levaillant, Barbus, pl. 27).—(?) *C[apito] amazonicus* Deville and Des Murs, Rev. Zool., April, 1849, 171 (Ega and Santa Maria, e. Peru).—*Capito amazonicus* Sclater, Ibis, 1861, 186.—*Micropogon amazonicus* Des Murs, Zool. Voy. Castelnau, Ois., 1855, 28.—(?) *Micropogon amazonicus* Des Murs, Zool. Voy. Castelnau, Ois., pl. 8.—(?) *Capito niger* (not *Bucco niger* Müller) Bartlett, Proc. Zool Soc. Lond., 1882, 374 (Loretoyacu, e. Peru).  
<sup>b</sup> (?) *C[apito] amazonicus*, part, Deville and Des Murs, Rev. Zool., April, 1849, 171, in text.—(?) *Micropogon amazonicus*, part, Des Murs, Zool. Voy. Castelnau, Ois., 1855, 28.—(?) *Capito auratus* (not *Bucco auratus* Dumont) Shelley, Cat. Birds Brit. Mus., xix, 1891, 112 (Guiana; Oyapok, Cayenne; Ega and Pebas, e. Peru.—*Capito aurantiiventris* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 87 (Upper Amazon Valley?—probably Rio Negro or Rio Tapajós; coll. Mus. Comp. Zool.).

<sup>c</sup> *Bucco auratus* Dumont, Dict. Sci. Nat., iv, 1816, 54 (Peru; coll. Mus. Paris).—*[Capito] auratus* Gray, Hand-list, ii, 1870, 178, no. 8491.—*Capito auratus* Taczanowski, Proc. Zool. Soc. Lond., 1874, 549 (centr. Peru).—*Capito punctatus* Lesson, Traité d'Orn., 1831, 165 (no locality; =adult male); Shelley, Cat. Birds Brit. Mus., xix, 1891, 112.—*Bucco punctatus* Des Murs, Icon. Orn., 1846, pl. 20.—(?) *Capito aurifrons* Vigors, Proc. Zool. Soc. Lond., 1832, 3 (no locality; =adult female?).—*Micropogon aurifrons*? Des Murs, Zool. Voy. Castelnau, Ois., 1855, pl. 9, fig. 1.—*Micropogon flavicollis* Bonaparte, Proc. Zool. Soc. Lond., 1837, 120 (no locality).—? [*Micropogon*] *auricollis* "Levaill[ant]" Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 12) (=nomen nudum).—(?) *Micropogon peruvianus* (not *Bucco peruvianus* Cuvier) Des Murs, Zool. Voy. Castelnau, Ois., 1855, 26 (crit.).—(?) *Capito auratus intermedius* Berlepsch and Hartert, Novit. Zool., ix, April, 1902, 98 (Nericagua, Venezuela; coll. Tring Mus.).



gg. Breast heavily spotted with black (the throat also spotted or streaked with black).

**Capito auratus auratus**, adult female (extralimital).

ff. Pileum deep russet; remiges and rectrices slate-blackish. (Rio Beni, Bolivia).....**Capito auratus bolivianus** (extralimital).<sup>a</sup>

ee. Sides and flanks plain light olive; back, etc., plain deep olive. (Eastern Ecuador and eastern Peru.) (*Capito aurovirens*).<sup>b</sup>

f. Pileum and nape bright red.

**Capito aurovirens**, adult male (extralimital).

ff. Pileum and nape pale gray, becoming nearly white on forehead.

**Capito aurovirens**, adult female (extralimital).

bb. Throat white.

c. A colored chest-band; breast and abdomen white; no red on occiput.

d. Chest-band orange or orange-yellow; forehead black; back uniform black; flanks heavily spotted with black, passing into orange-yellow, orange or scarlet exteriorly. (*Capito maculicoronatus*.)

e. Flank-patch orange; spots on crown more brownish, not coalesced. (Panama, east to Canal Zone.)

**Capito maculicoronatus maculicoronatus**, adult male (p. 323).

ee. Flank-patch scarlet; spots on crown dull white, coalesced into a patch.

f. Smaller (wing 77-83.5, tail 48.5-50, exposed culmen 20.5-22). (Eastern Panama, east of Canal Zone.)

**Capito maculicoronatus pirrensis**, adult male (p. 324).

ff. Larger (wing 81-84, tail 49-52.5, exposed culmen 23-24). (Western Colombia.)

**Capito maculicoronatus rubrilateralis**, adult male (extralimital).<sup>c</sup>

dd. Chest-band light grayish brown; forehead crimson; back broadly striped with white; flanks pale yellow, unspotted. (Colombia.)

**Capito hypoleucus**, adult male (extralimital).<sup>d</sup>

cc. No colored chest-band; breast and abdomen yellow; occiput red. (Colombia.)

**Capito quinticolor** (extralimital).<sup>e</sup>

aa. Throat, chest, and breast uniform black.

b. Back, scapulars, wing-coverts, etc., uniform black; forehead black. (*Capito maculicoronatus*, adult female.)

c. Flank-patch orange; spots on crown more brownish, not coalesced.

**Capito maculicoronatus maculicoronatus**, adult female (p. 323).

cc. Flank-patch scarlet; spots on crown less brownish (dull white), coalesced into a uniform patch.

<sup>a</sup> *Capito auratus bolivianus* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 87 (Rio Beni, Bolivia; coll. Mus. Comp. Zool.).

<sup>b</sup> *Bucco aurovirens* Cuvier, Règne Anim., ed. 2, i, 1829, 458 (based on *Le Barbu oranvert* Levaillant, Barbus, iii, Suppl., pl. E).—*Micropogon aurovirens* Bonaparte, Proc. Zool. Soc. Lond., 1837, 120.—*C[apito] aurovirens* Gray, Gen. Birds, ii, 1846, 430.—*Capito aurovirens* Marshall, Mon. Capit., 1871, 155, pl. 62; Shelley, Cat. Birds Brit. Mus., xix, 1891, 108.—[*Eubucco*] *aurovirens* Bonaparte, Consp. Av., i, 1850, 142.

<sup>c</sup> *Capito maculicoronatus rubrilateralis* Chapman, Bull. Am. Mus. N. H., xxxi, July 23, 1912, 144 (Juntas de Tamaná, alt. 800 ft., Cauca, w. Colombia; coll. Am. Mus. N. H.).

<sup>d</sup> *Capito hypoleucus* Salvin, Bull. Brit. Orn. Club, vii, no. xlviii, Nov. 29, 1897, p. xvi (Valdivia, Antioquia, Colombia; coll. Salvin and Godman).

<sup>e</sup> *Capito quinticolor* Elliot, Nouv. Archiv. Mus. Paris, i, Bull., 1865, 76, pl. 4, fig. 1 (Colombia); Marshall, Mon. Capit., 1871, 163, pl. 65; Shelley, Cat. Birds Brit. Mus., xix, 1891, 111; Dalmas, Bull. Soc. Zool. France, 1900, 176 (El Paillon, Buenaventura, n. w. Colombia; descr. adult female).

d. Smaller (wing 76.5–81, tail 47.5–49, exposed culmen 20.5–22, tarsus 20–22).

*Capito maculicoronatus pirrensis*, adult female (p. 324).

dd. Larger (wing 79–86, tail 45–52, exposed culmen 22–24, tarsus 21.5–23).

*Capito maculicoronatus rubrilateralis*, adult female (extralimital).

bb. Back, scapulars, wing-coverts, etc., conspicuously margined with white; forehead red. (Western Ecuador.)

*Capito squamatus*, adult [female?] (extralimital).<sup>a</sup>

## CAPITO MACULICORONATUS MACULICORONATUS Lawrence.

### SPOTTED-CROWNED BARBET.

*Adult male*.—Above mostly plain glossy blue-black, the wings and tail black but wing-coverts margined with glossy blue-black; median portion of pileum (broadly) brownish black, each feather (except on forehead) tipped with a large spot of pale brown or dull brownish white; under parts, including malar region, mostly dull white, the breast crossed by a broad band of saffron yellow or indian yellow, the sides and flanks marked with large spots (mostly ovate or guttate) of blue-black, the outer portion of flanks also streaked with bright yellowish orange; outer side of thighs mostly deep blue-black; bill grayish horn color on basal half or more, blackish terminally; iris dark (brown?);<sup>b</sup> legs and feet dusky grayish (bluish or greenish in life?); length (skins), 148–172 (158); wing, 78.5–84 (80.7); tail, 47.5–51 (49.5); exposed culmen, 21–23.5 (22.1); tarsus, 21–23 (21.9); outer anterior toe, 16.5–18 (17.4).<sup>c</sup>

*Adult female*.—Upper parts exactly as in the adult male, but anterior under parts, as far back as middle of breast wholly uniform, slightly glossy, blue-black, and orange-color on flanks more extensive, forming a conspicuous patch; bill, etc., as in adult male; length (skins), 145–157 (152); wing, 76–81.5 (78.6); tail, 46–49 (47.5), exposed culmen, 20.5–23 (21.9); tarsus, 20–22.5 (21.6); outer anterior toe, 16.5–17.5 (17.2).<sup>c</sup>

Panamá, from Canal Zone westward (Lion Hill; near Panamá; Colón; Santiago de Veragua).

*Capito maculi-coronatus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 300 (Lion Hill?, Panamá; coll. G. N. Lawrence).

[*Capito*] *maculi-coronatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 110.

*Capito maculicoronatus* SCLATER, Ibis, 1862, 1, pl. 1.—GOFFIN, Mus. Pays-Bas, i, Buccones, 1863, 57.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 366 (Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (Santiago de Veragua, Panamá).—MARSHALL, Mon. Capitonidæ, 1871, 153, pl. 61.—SHELLEY, Cat. Birds Brit. Mus., xix, 1891, 109, part (Veragua, Panamá, and Lion Hill, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 548, part (Santiago de Veragua; Lion Hill; Panamá).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 18 (Loma del Leon=Lion Hill, Panamá).

[*Capito*] *maculicoronatus* GRAY, Hand-list, ii, 1870, 178, no. 8494.

<sup>a</sup> *Capito squamatus* Salvin, Ibis, ser. 3, vi, Oct., 1876, 494, pl. 14 (Santa Rita, w. Ecuador; coll. Salvin and Godman); Shelley, Cat. Birds Brit. Mus., xix, 1891, 110.

<sup>b</sup> Salmon, in Proc. Zool. Soc. Lond., 1879, 537.

<sup>c</sup> Eight specimens.

## CAPITO MACULICORONATUS PIRRENSIS Nelson.

## PIRRÍ BARBET.

Similar to *C. m. maculicoronatus* but flank-patch scarlet instead of orange, and spots on crown less brownish (dull white) and (except in worn plumage) coalesced into a nearly, if not quite, unbroken patch. Similar in coloration to *C. m. rubrilateralis*<sup>a</sup> but decidedly smaller, especially the bill.

*Adult male*.—Length (skins), 152–161 (157); wing, 77–83.5 (80.1); tail, 48.5–50 (49.1); exposed culmen, 20.5–22 (21.5); tarsus, 21–22 (21.5); outer anterior toe, 17–18 (17.5).<sup>b</sup>

*Adult female*.—Length (skins), 158–170 (162); wing, 76.5–81 (79); tail, 47.5–49 (48); exposed culmen, 20.5–22 (21.3); tarsus, 20–22 (21); outer anterior toe, 16.5–17 (16.8).<sup>c</sup>

Southeastern Panama (Cana, Darién, 1,800–2,500 feet).

*Capito maculicoronatus pirrensis* NELSON, Smithsonian Miscellaneous Coll., vol. 60, No. 21, Feb. 26, 1913, 1 (Cana, base of Mt. Pirri, e. Panama; coll. U. S. Nat. Mus. (Biol. Survey coll.).

## Genus DICRORHYNCHUS Carriker.

*Dicrorhynchus*<sup>d</sup> CARRIKER, Ann. Carnegie Mus., vi, "August 29" (i. e., Sept. 7), 1910, 571. (Type, *Tetragonops frantzii* Sclater.)

Similar to *Semnornis*<sup>e</sup> but differing in much less turgid maxilla, more sharply ridged mesorhinium, relatively much longer tarsus, relatively longer lateral rectrices, and very different style of coloration.

Bill much shorter than head, broadly triangular in vertical profile, much wider than deep basally (width at base equal to about one and a half times its depth at same point); culmen moderately convex,

<sup>a</sup> See pp. 322, 323.

<sup>b</sup> Four specimens.

<sup>c</sup> Three specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Eight adult males of <i>C. m. maculicoronatus</i> .....	80.7	49.5	22.1	21.9	17.4
Four adult males of <i>C. m. pirrensis</i> .....	80.1	50.4	22.7	21.8	17.9
Four adult males of <i>C. m. rubrilateralis</i> .....	83	51.1	23.6	22	18.1
FEMALES.					
Eight adult females of <i>C. m. maculicoronatus</i> .....	78.6	47.7	21.9	21.6	17.2
Three adult females of <i>C. m. pirrensis</i> .....	79	48	21.3	21	16.8
Six adult females of <i>C. m. rubrilateralis</i> .....	82	48.7	22.7	22.2	17.9

<sup>d</sup> δικροός, bifurcate; ῥόγχος, bill. (Carriker.)

<sup>e</sup> See p. 313.



distinctly ridged, the mesorhinium strongly carinate; gonys about as long as mandibular rami, distinctly convex, prominent basally, strongly ascending terminally, broadly rounded (distinctly ridged or carinate basally in adult males); lateral base of maxilla strongly tumid or turgid, with nearly vertical or truncate basal outline; maxillary tomium strongly incised or notched terminally, toothed subterminally; mandibular tomium rather shallowly incised terminally, the tip of the maxilla produced laterally into a prominent vertical tooth on each side, the two prongs inclosing the uncinatè tip of the maxilla. Nostril small, narrowly oval or elliptical, situated in a narrow groove which widens anteriorly. Latero-frontal antiæ with several elongated, slender, antrorse bristles; the rictus, malar apex, and chin with similar bristles. Orbital region partly naked. Wing short and rounded, very concave beneath, the longest primaries exceeding secondaries by much less than length of culmen; fifth, sixth, and seventh, or fourth to seventh, primaries longest, the eighth shorter than third, ninth decidedly shorter than secondaries, the tenth (outermost) a little more than half as long as ninth. Tail nearly to quite three-fourths as long as wing, the lateral pair of rectrices about two-thirds as long as middle pair. Tarsus more than twice as long as distance from nostril to tip of maxilla, much longer than longest toe with claw.

*Coloration*.—Head, throat, and chest plain bright olive-tawny, the capistrum dusky; above plain olive; under parts of body olive suffused with light yellow, the sides of breast with a patch of light gray; adult male with a nuchal tuft of elongated, narrow, glossy black feathers.

*Range*.—Highlands of Costa Rica and western Panama. (Monotypic.)

**DICRORHYNCHUS FRANTZII** (Sclater).

**COSTA RICAN PRONG-BILLED BARBET.**

*Adult male*.—Forehead and crown bright golden yellowish brown or tawny-orange; rest of pileum deep bright yellowish or brownish olive, passing through brownish olive into dull olive-green on rump and upper tail-coverts; tail dull olive; a conspicuous nuchal tuft of elongated, flattened, glossy black feathers; anterior portion of forehead (narrowly), lores, anterior portion of malar region, and chin dull blackish or dusky; auricular and malar regions (except anterior part of the latter), throat, and chest plain ochraceous-olive or olive-ochraceous; a patch of light bluish gray on each side of breast, margined anteriorly by a more or less distinct bar of dusky; median portion of breast (broadly) light olive, the feathers tipped with golden ochraceous or dull saffron yellow; the abdomen similar but more yellowish; rest of under parts light yellowish olive, suffused

with sulphur yellow; bill bluish gray or bluish horn color, darker terminally; eyelids dusky; iris brownish red, chestnut, or carmine; legs and feet olive-green to grayish olive in life, with soles of toes olive-yellowish; length (skins), 167–182 (174); wing, 84–92.5 (88.5); tail, 59–66.5 (62.5); exposed culmen, 17–19.5 (18.5); tarsus, 25–28 (26.9); outer anterior toe, 17.5–19 (18.6) <sup>a</sup>

*Adult female*.—Similar to the adult male but without any glossy black nuchal tuft; length (skins), 159–182 (170); wing, 82.5–91.5 (85.5); tail, 56–63 (60.3); exposed culmen, 16.5–19 (17.5); tarsus, 24.5–28 (25.6); outer anterior toe, 16–18.5 (17.4). <sup>b</sup>

*Young male*.—Similar to the adult male but without any bluish gray patch on sides of breast and with the glossy black nuchal tuft much smaller.

*Young female*.—Similar to the young male but without trace of the black nuchal tuft.

Highlands of Costa Rica (Barranca, Volcan de Poás; Burgos and El Roble, Volcan de Irazú; Volcan de Turrialba; Cervantes, Birris, Navarro, La Estrella, and Azahár, Cartago; La Palma de San José; Peorsnada; Coliblanco; Carrillo; La Hondura; Tapoto; Rancho Redondo; Quebrada Honda; Cariblanco de Sarapiquí) and western Panamá (Boquete, Boquerón, Loma Llena).

*Tetragonops frantzii* SCLATER, Ibis, Oct., 1864, 371, pl. 10 (Costa Rica; <sup>c</sup> coll. U. S. Nat. Mus.).—FRANTZIUS, Ibis, 1865, 551 (Turrialba near Birris or Cervantes, Costa Rica; note); Journ. für Orn., 1869, 363 (Costa Rica).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 87, 130 (San José, La Palma de San José, Cervantes, Navarro, and Birris, Costa Rica; crit.).—GRAY, List Birds Brit. Mus., Capit., 1868, 19.—MARSHALL, Mon. Capitonidæ, 1871, 3, pl. 2.—BOUCARD, Proc. Zool. Soc. Lond., 1878, 47 (Navarro, Costa Rica).—SHELLEY, Cat. Birds Brit. Mus., xix, 1891, 121 (Navarro and Volcan de Irazú, Costa Rica; Veragua).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Cervantes de Cartago and Rancho Redondo, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 550 (Birris, Rancho Redondo, La Palma de San José, Volcan de Irazú, Navarro, Quebrada Honda, Cervantes de Cartago, and San José, Costa Rica; Veragua).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 32 (Boquete, etc., Chiriqui, Panama, 4,000–7,000 ft.).

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Fourteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Costa Rica.....	87.6	61.8	18.2	26.3	18.4
Six adult males from western Panama.....	90	63.6	19	27.8	18.7
FEMALES.					
Ten adult females from Costa Rica.....	85.5	60.3	17.4	25.7	17.2
Four adult females from western Panama.....	85.4	60.2	17.7	25.4	17.9

<sup>c</sup> Type said to be from "near San José."

[*Tetragonops*] *frantzii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 110.

*Pan frantzii* RICHMOND, Auk, xvi, Jan., 1899, 77, in text.

*Semnornis frantzii* RICHMOND, Auk, xvii, April, 1900, 179, in text.—FERRY, Pub. 146, Field Mus. Nat. Hist., Orn. Ser, i, no. 6, 1910, 265 (*Coliblanco*, Costa Rica, habits).

*Dicrorhynchus frantzii* CARRIKER, Ann. Carnegie Mus., vi, 1910, 571 (*Burgos de Irazú*, Carrillo, La Estrella de Cartago, Azahar de Cartago, Cariblanco de Sarapiquí, La Hondura, etc., Costa Rica; habits).

### Superfamily RAMPHASTIDES.

#### THE TOUCANS.

>*Rhamphastidæ* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 348 (includes *Capitones*).

=*Rhamphastidæ* FUEERBRINGER, Unters. Syst. Nat. Vög., ii, 1888, 1391.

=*Rhamphastides* SHARPE, Rev. Classif. Birds, 1891, 83; Hand-list, ii, 1900, 189.

Desmognathous, scansorial (zygodactyle) Coraciiformes, related to the *Capitones* but differing in absence or great reduction of after-shaft, desmognathous (instead of ægithognathous or schizognathous) palate, truncate vomer, highly specialized bill, the last very large (always longer than head, sometimes nearly as large as body), with distinctly decurved culmen, more or less strongly uncinat maxilla, and peculiarly light construction, and with caudal muscles and terminal caudal vertebræ peculiar.<sup>a</sup>

The Ramphastides constitute a well-circumscribed group of zygodactylous Coraciiform, or, more properly speaking, Picine, birds, very closely related structurally to the *Capitones* (Barbets), but differing from the latter in the several anatomical characters pointed out above, and externally in the great development of the beak, which in some members of the typical genus, *Ramphastos*, exceeds the body in length and almost equals it in bulk. In this extraordinary development of the beak the Ramphastides resemble somewhat the anisodactylous Bucerotes (Hornbills), of the Old World tropics, but the beak is never surmounted by a casque or accessory structure, such as birds of the latter family almost invariably present. Although apparently so unwieldy, the toucan's beak is exceedingly light, the whole interior consisting of a network of bony fibers so arranged as to produce the maximum of strength

<sup>a</sup> In examining the caudal vertebræ, it will be found that the six basal ones are articulated by ball-and-socket joints and connected with the last ones, which are ankylosed, by a synovial joint, and can be bent dorsad till their superior spines touch the sacrum, while the broad and large transverse processes almost wholly prevent lateral motion. The muscles, therefore, which in other birds turn the tail sideways, in the toucans become assistants to the true elevators of the tail; for when the latter have bent it upward sufficiently, the former become dorsad of the center of motion, causing the jerk of the tail [a motion of that member exceedingly characteristic of the toucans] by suddenly combining with the elevator muscles. (Stejneger, Stand. Nat. Hist., iv, 1885, 415, 416.)



with the minimum of weight.<sup>a</sup> The tongue is also peculiar, consisting of a "long, narrow, thin lamina, flattened horizontally and supported by the anterior process of the hyoid bone, which forms a ridge beneath it. It measures nearly six inches in length in the large species [of *Ramphastos*]. At about four inches from its extremity it is obliquely notched on both sides, and these notches become deeper and deeper toward the apex, giving it a strongly bristled appearance." (Sclater, Cat. Birds Brit. Mus., vol. xix, p. 122.)

### Family RAMPHASTIDÆ.

#### THE TOUCANS.

- = [*Zygodactyli*] *Pteroglossi* VIEILLOT, Analyse, 1816, 26.
- = *Ramphastidæ* BONAPARTE, Saggio distr. An. Vert., 1831, 41; Prodr. Syst. Orn., 1840, 16; Consp. Av., i, 1850, 92.—SCLATER, Cat. Am. Birds, 1862, 324.—LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 16.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 412, 414, in text.
- = *Ramphastidæ* NITZSCH, Syst. Pterylog., 1840, 135.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. 108.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1391.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 551.—SHARPE, Hand-list, ii, 1900, 189.
- = *Ramphastinæ* BONAPARTE, Prodr. Syst. Orn., 1840, 17; Consp. Av., i, 1850, 92.
- = *Ramphastinæ* CABANIS, in Wiegmann's Archiv für Naturg., 1847, i, 348.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1873, 75 (English translation, 1889, 148).

The characters of the family Ramphastidæ are the same as those of the superfamily Ramphastides (as given on pp. 2, 327), the latter containing only this one family.

The Ramphastidæ are peculiar to the continental portion of tropical America, ranging from southern Mexico to northern Argentina, their southward distribution along the Pacific coast district being limited by the Gulf of Guayaquil, in Ecuador. Of the five genera and sixty species recognized in Sharpe's Hand-list of the Genera and Species of Birds (vol. ii, 1900, pp. 189–193), four of the former but only ten of the latter occur from Panama northward, the family being most numerously represented in the valley of the Amazon and contiguous regions of the Guianas, Venezuela, and Colombia.

The Toucans are forest birds of arboreal habits and feed chiefly on fruits, though in captivity, at least, they are completely omnivorous; and it is said that in the wild state they destroy the eggs and young of other birds, after the well-known habit of members of the Corvidæ. Little is known of their nesting habits, but so far as these have been

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<sup>a</sup> This structure is elaborately described and illustrated by Sir Richard Owen in the "Introduction" to Gould's "Monograph of the Ramphastidæ." See also Stejneger in "Standard Natural History," Birds, pp. 414–415.

ascertained they lay their eggs in cavities of trees, and the eggs are immaculate white with a rather glossy surface.

## KEY TO THE GENERA OF RAMPHASTIDÆ.

- a. Nostrils opening posteriorly, behind the elevated, truncate, posterior margin of the maxilla; tail much shorter than wing, fan-shaped, truncate or very slightly rounded, the rectrices widening terminally, with tip subtruncate; two outer primaries attenuated terminally; upper parts uniform black, the upper tail-coverts white, yellow, orange, or red; throat and foreneck white, yellow, or orange, bordered posteriorly by a band (more or less broad) of red.  
(*Ramphastinæ*.)

**Ramphastos** (p. 330).

- aa. Nostrils opening vertically or laterally; tail nearly as long as to longer than wing, wedge-shaped, strongly graduated, the rectrices narrowing terminally, with tip narrowly rounded (sometimes subacuminate); outer primaries not attenuated terminally; upper parts not uniform black, the upper tail-coverts neither white, yellow, nor orange, though sometimes red; throat and foreneck not white (or else rest of underparts green or pale blue), yellow (or else rest of underparts yellow with middle portion red), nor orange. (*Pteroglossinæ*.)
- b. Bill more tumid, the culmen more or less ridged (subcarinate), except basally; sides of maxilla not hollowed out or concave, never ridged nor grooved; general color not green.
- c. Tail longer than wing; auricular feathers not elongated, nor different in color from malar region, throat, etc.; breast neither black, tawny, nor gray; adult males without a flank patch of yellow or orange.
- d. Bill relatively thicker, much broader basally, and more compressed terminally, its width at base more than half the length of gonys, the culmen more compressed (distinctly subcarinate for terminal half or more); coloration plainer, the throat not black or dark chestnut, underparts without red (except, sometimes, under tail-coverts), and rump not red (or else rest of upper parts yellowish olive).
- e. Underparts pale blue passing into white on throat and sides of head, the under tail-coverts red and thighs chestnut; pileum and hindneck black; lower rump light yellow.....**Andigena** (extralimital).<sup>a</sup>
- ee. Width of bill at base not greater than its depth at same point; underparts saffron yellow; upper parts yellowish olive, the rump red.

**Bailloni** (extralimital).<sup>b</sup>

- dd. Bill relatively narrower, less broad basally, less compressed terminally (width at base decidedly less than half the length of gonys), the culmen more rounded; coloration more varied, the throat uniform black or dark chestnut (or else underparts yellow with a red band across middle and feathers of head peculiar), the rump red.

<sup>a</sup> *Andigena* Gould, Proc. Zool. Soc. Lond., 1850, 93. (Type,\* *Pteroglossus hypoglaucus* Gould.)—*Ramphomelus* Bonaparte, Ateneo Italiano, ii, 1854, 119 (Consp. Volucr. Zygod., 1854, 4). (Type, *Pteroglossus nigrirostris* Waterhouse.)—*Ramphomelas* (emendation) Bonaparte, Notes Orn. Coll. Delattre, 1854, 54, footnote.

Colombia to Peru and Bolivia. (Five species.)

<sup>b</sup> *Bailloni* Cassin, Proc. Ac. Nat. Sci. Phila., xix, 1867, 114. (Type, *Ramphastos bailloni* Vieillot.)—*Rhagoborus* Heine, in Heine and Reichenow, Nom. Mus. Hein. Orn., 1890, 229. (To replace *Bailloni* Cassin, on grounds of purism!)

Southeastern Brazil. (Monotypic.)

- e. Feathers of head peculiar, consisting (except basally) of the broadly expanded horny shaft, those of pileum curled, resembling shavings of glossy black horn; throat yellowish white passing into yellow on foreneck, speckled with black ..... *Bauharnaisius* (extralimital).<sup>a</sup>
- ee. Feathers of head normal; throat uniform black or dark chestnut. *Pteroglossus* (p. 340).
- cc. Tail not longer (usually shorter) than wing; auricular feathers elongated, yellow, contrasting with the uniform black or chestnut of rest of head; breast black, tawny, or gray (like foreneck and throat); adult males with a flank patch of yellow or orange elongated feathers. .... *Selenidera* (p. 348).
- bb. Bill compressed laterally, the culmen broadly rounded (sometimes flattened basally); sides of maxilla more or less concave, sometimes ridged and grooved; general color green ..... *Aulacorhynchus* (p. 351).

### Genus RAMPHASTOS Linnæus.

*Ramphastos* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 103; ed. 12, i, 1766, 150. (Type, *R. tucanus* Linnæus.)

*Rhamphastos* (emendation) DAUDIN, Traité Élém. Compl. Orn., i, Jan., 1800, 376, 422.

*Tucaius* BONAPARTE, Ateneo Italiano, ii, 1854, 119 (Consp. Vol. Zygod., 1854, 4). (Type, *Ramphastos dicolorus* Linnæus.)

*Tucajus* (emendation) CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 105.

*Burhynchus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 102. (Type, *Ramphastos carinatus* Swainson=*R. piscivorus* Linnæus.)

*Tucanus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 104. (Type, *Ramphastos erythrorhynchus* Gmelin=*R. tucanus* Linnæus.)

*Ramphodryas* CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 106. (Type, *Ramphastos ariel* Vigors.)

*Dinorhamphus*<sup>b</sup> HEINE, in Heine and Reichenow, Nom. Mus. Hein. Orn., 1890, 228. (New name for *Tucanus* Cassin, on grounds of purism!)

Bill enormously developed (more than twice as long as head, sometimes four times as long as head and nearly as long as wing), more than twice as long as deep, the width at base much less than its depth at same point; culmen curved from base (the middle portion sometimes nearly straight), strongly decurved terminally, broadly rounded, flattened, or distinctly ridged (carinate); maxillary tomium strongly concave throughout or nearly straight for most of its length, then strongly concave terminally, the mandibular tomium correspondingly convex, both more or less strongly serrate; gonys more than twice to more than five times as long as mandibular rami, more or less prominent basally, not ridged, nearly straight for most of its length but

<sup>a</sup> *Bauharnaisius* Bonaparte, Consp. Av., i, 1850, 95. (Type, *Pteroglossus beauharnaisi* Wagler.) *Beauharnasius* Bonaparte, Ateneo Italiano, ii, 1854, 119 (Consp. Volucr. Zygod., 1854, 4). (Type, *Pteroglossus beauharnaisi* Wagler.)—*Ulocornis* Heine, in Heine and Reichenow, Nom. Mus. Hein. Orn., 1890, 229. (To replace *Bauharnaisius* Bonaparte, on grounds of purism!)

Upper Amazon Valley. (Monotypic.)

<sup>b</sup> *Δεινός*, mighty; *ῥαμφος*, beak (Richmond).



strongly concave terminally, the tip of mandible more or less strongly decurved; mandibular rami contracted and truncate basally; base of maxilla truncate or subtruncate, raised abruptly above the level of the head. Nostrils transversely oval, opening posteriorly in posterior rim of maxilla, quite concealed by the frontal feathers. Orbital region naked, the interramal space also naked anteriorly, sparsely feathered posteriorly. Wing rather large but primaries relatively short, the longest extending only slightly beyond secondaries; fourth, fifth, and sixth, or fifth, sixth, and seventh primaries longest, the eighth usually shorter than secondaries (rarely slightly longer than second primary), the ninth much shorter than secondaries, the tenth (outermost) about two-thirds as long as ninth; ninth and tenth (two outermost) primaries conspicuously attenuated terminally, the contracted terminal portion rounded at tip, sometimes subspatulate. Tail a little more than two-thirds to more than five-sixths as long as wing, truncate or slightly rounded, the rectrices gradually widening terminally, with tip broadly rounded or subtruncate. Tarsus less than one-fourth to more than one-fourth as long as wing, longer than longest toe with claw.

*Coloration*.—General color uniform black; auricular and malar regions, throat, and foreneck immaculate white, yellow, or orange, succeeded by a jugular band of red (this sometimes extending over whole chest, breast, and sides); under tail-coverts bright red, the upper coverts red, orange, yellow, or white; bill brilliantly colored in life, also the bare skin of orbital region and chin. (Sexes alike in coloration.)

*Range*.—The whole of continental tropical America (except southwestern Mexico); north to southeastern Mexico, south to eastern Peru, Bolivia, Argentina, Paraguay, and southeastern Brazil. (Fourteen species.)

There are considerable and marked variations in details of external structure among the species of this genus, but these variations do not serve to divide the genus into well-defined groups of species. Thus, in *R. dicolorus* and *R. ariel*, relatively small-billed species, the sides of the maxilla are distinctly concave or hollowed out along each side of the culmen, all the other species examined having the same portion inflated to the level of the general surface. In a specimen of what appears to be a young *R. inca* (from Yungas, Bolivia), however, this same concavity along the upper portion of the sides of the maxilla is very evident, the adult having no trace of it. Taking the larger-billed species, *R. erythrorhynchus* and *R. inca* have the culmen broadly rounded throughout its length, except for the decurved terminal portion; in *R. toco*, *R. carinatus*, and *R. brevicarinatus* the culmen is compressed and carinate, while in *R. swainsonii* it is indistinctly

ridged, or intermediate between the extremes as shown in *R. erythrorhynchus* and *R. inca* on the one hand and *R. toco*, etc., on the other. In *R. toco* the mandibular rami are relatively much shorter and the interramal space therefore shorter and more broadly triangular than in other species.

KEY TO THE SPECIES AND SUBSPECIES OF RAMPHASTOS.

- a. Terminal portion of maxilla and mandible red, the maxilla with a broad lateral area of yellow or orange. (*Ramphastos piscivorus*.)  
 b. Breast without a distinct (if any) band of red; averaging larger, especially the bill (culmen averaging 150.3 in male, 131.4 in female). (Southeastern Mexico to Guatemala and British Honduras.)

***Ramphastos piscivorus piscivorus* (p. 332).**

- bb. Breast with a distinct red band bordering yellow of foreneck; averaging smaller (culmen averaging 136.1 in male, 120.4 in female). (Honduras to Colombia and Venezuela).....

***Ramphastos piscivorus brevicarinatus* (p. 334).**

- aa. Terminal portion of maxilla yellow, of mandible black; maxilla with lower lateral portion black or horn color or dull reddish margined above by black.

- b. Mandible and latero-basal portion of maxilla light horn color distinctly tinged with reddish or pinkish. (Southern Honduras to Venezuela and Ecuador.)

***Ramphastos swainsonii* (p. 336).**

- bb. Mandible and latero-basal portion of maxilla black, dark grayish horn color, or dark grayish olive. (Eastern Panama to Ecuador.)

***Ramphastos ambiguus* (p. 339).**

**RAMPHASTOS PISCIVORUS PISCIVORUS Linnæus.**

**KEEL-BILLED TOUCAN.**

*Adults (sexes alike).*—Pileum and hindneck black, the latter strongly washed with maroon; upper tail coverts white; rest of upper parts slightly glossy greenish black; malar and auricular regions, throat, and foreneck bright lemon or pure gamboge yellow, the strongly convex posterior margin sometimes with a few touches of red; under tail-coverts bright poppy red or carmine; rest of under parts, including under side of wing, uniform black; bill red and orange terminally, yellowish along culmen and in an ovate-cuneate space on lower side of proximal half of maxilla, elsewhere olive-dusky, in dried skins; <sup>a</sup> legs and feet dusky (in dried skins). <sup>a</sup>

*Young.*—Similar to adults but coloration of bill much duller, with differently colored areas not sharply defined.

*Adult male.*—Length (skins), 472–560 (527); wing, 187–220 (208.6); tail, 147.5–178 (164.8); culmen, 133.5–159 (150.3); tarsus, 47–51 (49); outer anterior toe, 33–40 (36.4). <sup>b</sup>

<sup>a</sup> The colors of the bill, feet, etc., in living and freshly killed specimens are much more bright, but I have no notes as to fresh colors in this subspecies. See, however, under *R. p. brevicarinatus*.

<sup>b</sup> Ten specimens.

*Adult female*.—Length (skins), 470–500 (485); wing, 195.5–212 (204.3); tail, 145.5–168.5 (158); culmen, 121–142.5 (131.4); tarsus, 43.5–49.5 (47); outer anterior toe, 33–38 (36).<sup>a</sup>

Southeastern Mexico, in States of Puebla (Metlaltoyuca), Vera Cruz (Playa Vicente; Misantla; Colipa; Hacienda de los Atlixcos; Hacienda Tortuga; Vega de Casadero; San Lorenzo; Alvarado; Córdova; Jalapa; Miradór; Cosamaloapám; Uvero; Atoyác; Pasa Nueva; Tolosa), Oaxaca (mountains near Santo Domingo; Chimalapa), Tabasco (Teapa), and Yucatan (northern Yucatan; Meco Island) to Guatemala (Choctúm; sources of Rio de la Pasión; Lanquín; Cajabón; Rio Dulce; Los Amates, Yzabál; Santo Tomas), British Honduras (Belize; Orange Walk; Chasniguas; near Manatee Lagoon; near Quamin Creek; near Soldier Creek; Toledo District), and Honduras (San Pedro; Céiba).

[*Ramphastos*] *piscivorus* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 151 (based on *Tucana s. Pica brasiliensis* Edwards, Birds, pl. 64; *Tucana brasiliensis gutture albo* Brisson, Orn., iv, 413; *Picus americanus* Hernandez, Mex., 697; *Xochitenacatl* Ray, Av., 178).—GMELIN, Syst. Nat., i, pt. i, 1788, 355.—LATHAM, Index Orn., i, 1790, 136.

*R[amphastos] piscivorus* BONAPARTE, Consp. Av., i, 1850, 93.

*Ramphastos piscivorus* SCLATER, Cat. Am. Birds, 1862, 324 (Vera Paz, Guatemala; Jalapa, Mex.).

(?) *Ramphastos carinatus* SWAINSON, Zool. Illustr., ser. 1, i, no. 8, May, 1821, pl. 45 and text (locality unknown; based on a bill, and a sketch by an unknown artist; also, largely, on Edwards).

*Ramphastos carinatus* GOULD, Proc. Zool. Soc. Lond., 1834, 73 (Mexico); Mon. Ramphastidæ, ed. 1, 1834, pl. 7; ed. 2, 1854, pl. 2.—STURM, ed. Gould's Mon. Ramph., pt. iii, 1842, pl. 2.—BONAPARTE, Proc. Zool. Soc. Lond., 1837, 108 (Mexico).—SCLATER, Proc. Zool. Soc. Lond., 1856, 308 (Cordova, Vera

<sup>a</sup> Five specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.					
Six adult males from State of Vera Cruz .....	213.2	169.5	156.7	49.7	37.6
One adult male from State of Oaxaca .....	207	159	147	47	34
Two adult males from British Honduras .....	206.5	162.5	141	47.5	33.5
One adult male from Guatemala (Los Amates, Yzabal) .....	187	147.5	133.5	50	34.5
FEMALES.					
One adult female from Puebla .....	212	168.5	137	49	38
Two adult females from Vera Cruz .....	206	159	138	48.7	35.7
One adult female from British Honduras .....	202	158	123	43.5	37.5
One adult female from Guatemala (Los Amates) .....	195.5	145.5	121	45	33

Specimens from Guatemala and British Honduras are intermediate in coloration between those from Mexico and *R. p. brevicarinatus*, most of them having the red jugular band distinctly indicated. They seem to be nearer the northern form, however, than to the southern one.



- Cruz).—MOORE, Proc. Zool. Soc. Lond., 1859, 59 (Honduras; habits).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 102 (Jalapa, Mirador, Potrero, and Cordova, Mex.; Vera Paz and Coban, Guatemala; Belize, Honduras; crit.).—BOUCARD, Liste Ois. récol. Guat., 1878, 24 (Guatemala).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 163 (Santa Ana, Vera Cruz).
- R[amphastos] carinatus* WAGLER, Syst. Av., 1827, sp. 7; Isis, 1829, 506 (Mexico).—TSCHUDI, Fauna Peruana, Aves, 1845-46, 261.
- Rhamphastos carinatus* SCLATER, Proc. Zool. Soc. Lond., 1859, 388 (Playa Vicente, Vera Cruz); Cat. Birds Brit. Mus., xix, 1891, 125 (localities in Vera Cruz; Teapa, Tabasco; Meco I., Yucatan; n. Yucatan; Orange Walk and Belize, Brit. Honduras; Choctum, sources of Rio de la Pasion, Lanquin, Cajabon, and Rio Dulce, Guatemala; San Pedro, Honduras).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1859, 135 (Rio Dulce, Guatemala; notes).—SCLATER, Proc. Zool. Soc. Lond., 1859, 368 (Jalapa, Vera Cruz).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 560 (Vera Cruz).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 455 (Yucatan; habits).—SALVIN, Ibis, 1889, 373 (Meco I., Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 552 (Misantla, Colipa, Hacienda de los Atlixcos, Hacienda Tortuga, Vega del Casadero, San Lorenzo, Alvarado, Cordova, Cosamaloapam, Uvero, Atoyac, and Playa Vicente, Vera Cruz; Teapa, Tabasco; Meco I.; Orange Walk and Belize, Brit. Honduras; Choctum, sources of Rio de la Pasion, Lanquin, Yzabal, and Rio Dulce, Guatemala; San Pedro, Honduras).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 90 (Los Amates, Yzabal, Guatemala).
- [Rhamphastos] carinatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 108, part (Mexico, etc.).
- [Burhynchus] carinatus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 228 (Jalapa).
- Ramphastos tucanus* (not of Linnæus) SHAW, Gen. Zool., viii, pt. 2, 1811, 362.
- R[amphastos] callorhynchus* WAGLER, Syst. Av., 1827, sp. 6 (new name for *R. piscivorus* Linnæus).
- Ramphastos sulfuratus* LESSON, Traité d'Orn., livr. 3, July, 1830, 173 (Mexico; coll. Paris Mus.).—PUCHERAN, Rev. et Mag. de Zool., 1853, 72 (crit.).
- Rhamphastos sulfuratus* HARTLAUB, Journ. für Orn., 1855, 422 (crit.).
- Ramphastos poecilorhynchus* LICHTENSTEIN, Preis-Verz. Säug., Vög., 1830, 1 (Mexico; coll. Berlin Mus.); Journ. für Orn., Jan., 1863, 54 (reprint).
- (?) *Rhamphastus ariel* (not *Ramphastos ariel* Vigors) LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Santo Tomas, Guatemala).
- (?) *Rhamphastos brevicarinatus* (not of Gould?) BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 145 (Ceiba, Honduras).

### RAMPHASTOS PISCIVORUS BREVICARINATUS (Gould).

#### SHORT-KEELED TOUCAN.

Similar to *R. p. piscivorus* but bill averaging decidedly shorter, its red terminal portion less extensive,<sup>a</sup> and deeper yellow of throat and foreneck margined posteriorly by a conspicuous, rather broad, curved bar of bright carmine or poppy red.

<sup>a</sup> Fresh colors of five specimens (two of them cage birds of unknown locality) were as follows: Upper area of maxilla: (1) Parrot green fading into apple green below, the basal tomial portion and a streak parallel with anterior half of the orange lateral space light blue; (2) Nile green; (3) sulphur yellow; (4) light yellowish green on culmen, more bluish green below; (5) green, passing into blue anteriorly. Lateral area: (1) Orange; (2) light red (orange-red); (3, 4, and 5) fine orange-yellow. General color of mandible: (1) Parrot green, edged above and below with bright "crab" or azure blue

*Adult male*.—Length (skins), 435–495 (468); wing, 185.5–214 (200); tail, 142–164 (155.2); culmen, 123–150 (136.1); tarsus, 43.5–49 (47.7); outer anterior toe, 33–43.5 (35.9).<sup>a</sup>

*Adult female*.—Length (skins), 420–467 (441); wing, 181.5–207 (193.2); tail, 142–156 (148.5); culmen, 107–131 (120.4); tarsus, 45–50 (46.4); outer anterior toe, 31–37.5 (34).<sup>b</sup>

Southern Honduras (mouth of Rio Tuma) through Nicaragua (Greytown; Bluefields; La Libertad; San Emilis; Los Sábalos; Rio Escondido; Jalapa; Pena Blanca; Matagalpa), Costa Rica (San José; Angostura; Aguacate; Machuca; Orosí; Tucurriqui; Turrialba; Cartago; Naranjo de Cartago; Grécia; Guayabo; Bonilla; Cuabre; Guácimo; El Hogár; Talamanca; Sipúrio; Dota Mts.; Miravalles), Panamá (Panamá; Lion Hill; Laguna del Pita; Chitra; Santa Fe de Veragua) to Colombia (Bonda, Cacagualito, Santa Marta, Puebla Viejo, Manaure, and Minca, Santa Marta; Barranquilla) and Venezuela to Trinidad.<sup>c</sup>

*Ramphastos brevicarinatus* GOULD, Mon. Ramphast., 2d ed., 1854, pl. 3 and text (Panama; coll. J. Gould).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 103.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 518 (Rio Escondido, Nicaragua).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 134 (Santa Marta, Colombia), 157 (Puebla Vieja, Santa Marta).

Footnote—Continued.

and passing into the same distally; (2) Nile green; (3) sulphur yellow; (4) bluish green; (5) bright azure blue. Terminal area of both maxilla and mandible deep red (crimson, deep cherry red, or carmine). Basal margin of bill, deep black. Iris: (1) Greenish white; (2) brown; (3) olive-green; (4) gray; (5) orange-yellow. Bare orbital space: (1) Emerald-green passing into gamboge yellow exteriorly and with a narrow crescentic mark of lavender below eye; (2) (not stated); (3) lemon yellow; (4) bright yellowish green, verdigris green round eye; (5) pale blue, "dusted" with green. Legs and feet: (1) "Crab" blue or azure, with sides of tarsus more greenish; (2) light blue; (3) lead blue; (4) dull cobalt blue; (5) "dusty" green.

Specimens nos. 1 and 2 are from eastern Nicaragua, no. 3 from Costa Rica, 4 and 5 of unknown locality.

<sup>a</sup> Twelve specimens (Panama to Nicaragua).

<sup>b</sup> Ten specimens (Panama to Nicaragua).

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.					
Two adult males from Nicaragua.....	211.5	164	138	49	35.5
Eight adult males from Costa Rica.....	197.6	152	135.9	47.7	35.2
Two adult males from Panama.....	198.2	159.5	134.7	46.2	39.2
One adult male from Colombia (Bonda, Santa Marta).....	197	160.5	150	50	35.5
FEMALES.					
Two adult females from Nicaragua.....	196.5	152.2	122	46.7	36.2
Seven adult females from Costa Rica.....	192.1	144.4	121.4	46.4	34
One adult female from Panama.....	195	150	119	45.5	30
Two adult females from Colombia (Santa Marta).....	194	151	121.7	47.5	36.2

<sup>c</sup> Specimens from Venezuela and Trinidad not seen by me.

*Rhamphastos brevicarinatus* SCLATER, Cat. Birds Brit. Mus., xix, 1891, 127 (Turrialba, Costa Rica; Chitra, Santa Fe de Veragua, and Panama, Panama; Santa Marta, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 553 (Matagalpa, Rio Escondido, Bluefields, Los Sábalos, La Libertad, San Emilis, and Greytown, Nicaragua; San José, Angostura, Dota Mts., Aguacate, Machuca, Orosi, Tucurriqui, Cartago, Naranjo de Cartago, Turrialba, and Miravalles, Costa Rica; Chitra, Santa Fe de Veragua, and Lion Hill, Panama; n. Colombia).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 9 (Laguna del Pita, Panama).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 17 (Loma del Leon, Panama).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 266 (Guayabo, Costa Rica; habits).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 572 (Costa Rica; crit.; habits).

*R[hamphastos] brevicarinatus* SALVIN, Ibis, 1869, 317 (Costa Rica).

[*Rhamphastos*] *brevicarinatus* SHARPE, Hand-list, ii, 1900, 189.

*Burhynchus brevicarinatus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 228 (Barranquilla, Colombia).

*Ramphastos approximans* CABANIS, Journ. für Orn., x, no. 59, Sept., 1862, 333 (Costa Rica; coll. Berlin Mus.).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 103.—FRANTZIUS, Journ. für Orn., 1869, 362 (Costa Rica).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 128; crit. (San José, Angostura, Dota, and Grecia, Costa Rica).

*Ramphastos carinatus* (not of Swainson) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 299 (Panama).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 366 (Panama).—SALVIN, Proc. Zool. Soc. Lond., 1867, 156 (Santa Fe de Veragua, Panama; crit.); 1870, 211 (Chitra, Veragua).—NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 407 (Los Sábalos, Nicaragua).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Cartago, Naranjo de Cartago, and Turrialba, Costa Rica).

*Rhamphastos carinatus* SALVIN and GODMAN, Ibis, 1879, 206 (Manaure, Santa Marta, Colombia, 2,700 ft.); 1880, 175 (Minca, Santa Marta, 2,000 ft.).—UNDERWOOD, Ibis, 1896, 445 (Volcan de Miravalles, Costa Rica).

[*Rhamphastos*] *carinatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 108, part (Panama, etc.).

*Ramphastos piscivorus* (not of Linnæus) LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 183 (Greytown, Nicaragua).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 280 (Bluefields, Nicaragua).—FINSCH, Proc. Zool. Soc. Lond., 1870, 585 (Trinidad).

*Ramphastos tocard* (not of Vieillot) SALVIN and GODMAN, Ibis, 1879, 206 (Manaure, Santa Marta, Colombia, 2,700 ft.).

### RAMPHASTOS SWAINSONII Gould.

#### SWAINSON'S TOUCAN.

*Adults (sexes alike).*—Pileum, hindneck, and back black, strongly washed with maroon, especially on hindneck and upper back; upper tail-coverts white; rest of upper parts uniform, slightly glossy, bluish or greenish black; malar and auricular regions, throat, and foreneck deep lemon or pure gamboge yellow, usually paler anteriorly, the semicircular posterior outline margined by a narrow line of white immediately followed by a wider one of bright carmine or crimson; under tail-coverts bright poppy red or carmine; rest of under parts, including under side of wings, uniform black; lower-basal portion of maxilla deep chestnut or claret brown (fading to grayish or dull pink-



ish in dried skins), shading anteriorly and superiorly into black or margined by an oblique line of that color, the remainder (upper and terminal portions) of maxilla bright canary or lemon yellow, passing through sulphur yellow into light yellowish green on middle third (more or less) of culmen; proximal third (more or less) of mandible deep chestnut or claret brown, passing into black on terminal portion, the lateral basal margin also blackish; bare orbital space emerald green passing into greenish lemon yellow externally; bare skin of orbital region emerald green; iris brown; legs and feet light cærulean blue, the large scutella of tarsus more greenish; soles of feet wax yellow. <sup>a</sup>

*Young*.—Similar to adults but bill much less brightly colored, with the darker and lighter areas not sharply defined, the former dull brownish or dusky, the latter dull grayish yellow or pale horn color.

*Adult male*.—Length (skins), 515–590 (551); wing, 224–243 (232.2); tail, 147.5–176.5 (160.8); culmen, 150–192 (169.5); tarsus, 49–57 (52.8); outer anterior toe, 37–45 (40.9). <sup>b</sup>

*Adult female*.—Length (skins), 495–535 (517); wing, 215–235 (225.7); tail, 145–166 (155.4); culmen, 132–175 (152.2); tarsus, 48–55.5 (51.5); outer anterior toe, 37–46 (40.7). <sup>c</sup>

Southern Honduras (Rio Segóvia) through Nicaragua (Los Sábalos; Rio Escondido; Rio Grande; Rio Tuma; Vizagua; Savala; Matagalpa; Chontales), Costa Rica (Angostura; San Carlos; Turri-

<sup>a</sup> Fresh colors of specimens shot by the author in Costa Rica. The color of the iris and bare orbital space seems to vary, however, possibly according to season. Zeledón (in manuscript, on labels) says the iris is greenish yellow and the orbits "yellow, like breast." Nutting describes the iris as green.

<sup>b</sup> Twenty-four specimens.

<sup>c</sup> Twelve specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.					
One adult male from southern Honduras (Rio Segovia).....	227	150	151.5	50	41.5
Four adult males from Nicaragua.....	229.2	162.4	167.6	51.1	40.5
Nine adult males from Costa Rica.....	232.6	161.5	176.8	53.8	41.1
Three adult males from Panama.....	235	166.5	172.5	53.8	41.3
Five adult males from Colombia.....	233	156.9	159.4	52.1	40.7
Two adults (males?) from western Ecuador (Guayaquil).....	232.5	161.5	170.7	52	40
FEMALES.					
One adult female from southern Honduras (Rio Segovia).....	220	152	139.5	49	38.5
Two adult females from Nicaragua.....	223	148	141	52	40
Eight adult females from Costa Rica.....	228.4	158.7	154.7	51.4	41.4
One adult female from Panama.....	215	147	143.5	52	38.5

alba; Naranjo de Cartago; Bonilla; Guayabo; Guápiles; Orosi; Pozo del Rio Grande; Pozo Azul de Pirris; El Pozo de Térraba; Boruca; Talamanca), Panamá (Panamá; David; Bugaba; Volcan de Chiriquí), and Colombia (Rio Oscuro; near Honda, Tolima; San Antonio, Rio Cali; Castillo; Puerto Bérrio; Rio Nercua; Medellin and Remédios, Antioquia) to Ecuador (Guayaquil, Pallatanga, Chiguinda, Mapoto, Quito, Paramba, Guala, Intac, Foreste del Rio Peripa, Santo Domingo, Nanegál, and Chimbo, western slope; Valle de Mendez and San José, eastern slope), and Venezuela.

(?) *Ramphastos tocard* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxxiv, 1819, 281 (locality not given; based on *Le Tocard* Levaillant, Toucans, pl. 9).<sup>a</sup>—BONNATERRE and VIEILLOT, Enc. Méth., 1823, 1430.

*R[amphastos] tocard* (not of Vieillot?) BONAPARTE, Consp. Av., i, 1850, 93 (s. Mexico; Colombia).

*Ramphastos tocard* GOULD, Mon. Ramphast., ed. 2, 1854, pl. 4, upper fig., and text.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 299 (Panama); ix, 1868, 128 (Angostura, San Carlos, and Turrialba, Costa Rica).—CABANIS, Journ. für Orn., 1862, 334 (Costa Rica; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 366 (Panama); 1879, 537 (Medellin and Remedios, Antioquia, Colombia).—SALVIN, Proc. Zool. Soc. Lond., 1870, 211 (Bugaba and Volcan de Chiriqui, Panama).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 46 (San Carlos, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 407 (Los Sábalos, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 591 (Rio Segovia, Honduras).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Naranjo de Cartago, Jiménez, Las Trojas, and Pozo Azul de Pirris, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 518 (Rio Escondido, Nicaragua).

*Ramphastos tocard* SCLATER, Proc. Zool. Soc. Lond., 1860, 70 (Pallatanga, w. Ecuador; habits; colors of unfeathered parts); Cat. Am. Birds, 1862, 325 (Pallatanga, w. Ecuador); Cat. Birds Brit. Mus., xix, 1891, 127 (Chontales, Nicaragua; Angostura and San José, Costa Rica; Bugaba, Chiriqui; Medellin, Colombia; Pallatanga and Chiguinda, w. Ecuador).—FRANTZIUS, Journ. für Orn., 1869, 362 (Costa Rica).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 108 (Mapoto, Ecuador).—TACZANOWSKI, Orn. du Pérou, iii, 1886, 145.—ALLEN, Bull. Am. Mus. N. H., ii, 1889, 76 (Quito, Ecuador).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 48 (Boruca, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 554 (Central American localities; Rio Nercua, Colombia; Ecuador; Peru).—HARTERT, Novit. Zool., v, 1898, 498 (Paramba, n. w. Ecuador, 3,500 ft.).—(?) SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 22 (Valle de Mendez and San José, e. Ecuador; Guala, Intac, and Foreste del Rio Peripa, w. Ecuador; crit.).—(?) GOODFELLOW, Ibis, 1902, 215 (Santo Domingo, w. Ecuador; habits).—(?) MENEGAUX, Bull. Soc. Philom., 1908, 5 (Pallatanga, Nanegál, Mapoto, Chimbo, Paramba, Valle de Mendez, San José, Intac, and Foreste del Rio Peripa, w. Ecuador).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 573 (Costa Rica; habits).

[*Ramphastos*] *tocard* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 108.

*Rh[amphastos] tocard* TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 68 (Mapoto and Machay, Ecuador).

<sup>a</sup> Levaillant's plate, cited above, certainly does not represent this species; indeed, it does not agree with any known species! (See note under *R. ambiguus*, on p. 339.)

*Ramphastus tocard* SALVIN, Ibis, 1872, 323 (Chontales, Nicaragua).

[*Burhynchus*] *tocard* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 228 (Pallatanga, w. Ecuador).

*Ramphastus swainsonii* GOULD, Proc. Zool. Soc. Lond., 1833, 69 (mts. of Colombia); 1834, 73 (Colombia; "Mexico Australi"); Mon. Ramph., 1st ed., 1833, pl. 8 and text.

*Ramphastos swainsoni* STURM, ed. Gould's Mon. Ramph., 1841, pl. 31 (pt. iv, pl. 1).

### RAMPHASTOS AMBIGUUS Swainson.

#### WAGLER'S TOUCAN.

Similar to *R. swainsonii*, but darker portion of the bill wholly black or dark grayish horn color (without any red or pink tinge) passing into black on terminal portion of mandible and along upper margin of the dark maxillar area.

*Adult female*.—Length (skins), 457–587 (522); wing, 202–219 (211.7); tail, 144–160 (134.2); culmen, 122–154 (141.2); tarsus, 47–53 (49.7); outer anterior toe, 35–42 (38.1).<sup>a</sup>

Eastern Panamá (Loma del León) through Colombia (Bogotá; Rio Barratón; Puerto Bérrio; Manaure, Santa Marta) and Ecuador (Pallatanga, Guayaquil, Nanegál, and Chimbo, Pacific slope; Napo, Atlantic slope) to Peru (Chayavetas; Borgoña; La Gloria), Venezuela (Puerto Cabello; Guataparo) and Trinidad.

(?) *Ramphastos tocard* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxiv, 1819, 281 (locality unknown; based on *Le Tocard* Levaillant, Toucans, pl. 9).<sup>b</sup>

(?) *R[amphastos] tocard* VIEILLOT, Enc. Méth., iii, 1823, 1430.

*Ramphastos ambiguus* SWAINSON, Zool. Illustr., ser. 1, 3, no. 33, June, 1823, pl. 168 and text (locality unknown; based on a colored drawing by an unknown artist).—GOULD, Mon. Ramphastidæ, ed. 2, 1854, pl. 5 and text.—SCLATER, Proc. Zool. Soc. Lond., 1855, 160 (Bogota, Colombia); Cat. Am. Birds, 1862, 325 (Pallatanga, w. Ecuador).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 252 (Guataparo, Venezuela); 1873, 297 (Chayavetas, e. Peru).—FINSCH, Proc. Zool. Soc. Lond., 1870, 585 (Trinidad; crit.).

<sup>a</sup> Four specimens. (No males examined.)

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
FEMALES.					
One adult female from Panamá (Canal Zone).....	218	147	154	53	42
Two adult females from Colombia (Rio Barraton).....	205	145	130	47.5	35
One adult female from western Ecuador (Pallatanga).....	219	160	149	51	40.5

<sup>b</sup> While agreeing with the present species in most respects, both the description and colored plate of Levaillant's *Le Tocard* give the color of the throat and foreneck as pure white (instead of lemon yellow) and the upper tail-coverts bright red (instead of white)!



- Ramphastos ambiguus* SCLATER, Proc. Zool. Soc. Lond., 1859, 146 (Pallatanga, w. Ecuador); 1860, 95 (Nanegal, w. Ecuador); Cat. Birds Brit. Mus., xix, 1891, 128 (Bogota and Manaure, Colombia; Guataparo, Venezuela; Pallatanga and San José, w. Ecuador; Chayavetas, e. Peru).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 573 (Chimbo, n. w. Ecuador; crit.); 1885, 68 (Chimbo, w. Ecuador).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, pt. 2, 38 (Borgoña and La Gloria, centr. Peru).
- R[amphastos] eugnathos* WAGLER, Syst. Av., 1827, Additamenta (new name for *R. ambiguus* Gould).'
- Ramphastos swainsonii* GOULD, Proc. Zool. Soc. Lond., pt. i, no. vi, Sept. 20, 1833, 69, part (mts. of Colombia; coll. Zool. Soc. Lond.).
- Ramphastos swainsonii* GOULD, Mon. Ramphastidæ, ed. 1, part 1, 1833, pl. 8, lower fig., and text, part.
- R[amphastos] abbreviatus* CABANIS, Journ. für Orn., x, heft 5, Sept., 1862, 334 (Puerto Cabello, Venezuela; coll. Berlin Mus.).

### Genus PTEROGLOSSUS Illiger.

- Pteroglossus* ILLIGER, Prodr. Orn., 1811, 202. (Type, *Ramphastos aracari* Linnæus.)
- Aracari* LESSON, Mém. d'Orn., ii, 1828, 131. (Type, *Ramphastos aracari* Linnæus; new name to replace *Pteroglossus*, a "nom impropre.")
- Pyrostera* BONAPARTE, Ateneo Italiano, ii, 1854, 119 (Consp. Volucr. Zygod., 1854, 4). (Type, *Pteroglossus bitorquatus* Vigors.)
- Grammarhynchus* GOULD, Mon. Ramph., 2d ed., introd., 1854, 26. (Type, *Pteroglossus inscriptus* Swainson.)

Rather large to small Ramphastidæ (length about 320–480 mm.) with the excessively graduated tail longer than wing, rump red, throat and foreneck black or dark chestnut, under parts of body yellow (with or without a band of red across middle portion) or with anterior half red or black and red.

Bill three-fifths to more than three-fourths as long as wing, the culmen broadly rounded, usually more or less strongly arched (though sometimes straight basally), very strongly decurved terminally, the tip of maxilla distinctly (sometimes very strongly) uncinate; width of bill at base less than its depth at same point; sides of both maxilla and mandible smooth, without trace of ridge or groove or tendency to lateral concavity, but sometimes with tendency to transverse, shallow ridges or grooves on basal portion, usually with a raised basal margin (white or yellowish); tomial serrations very variable as to size and number, but always very distinct; gonys rounded, broadly so (sometimes flattened) basally, much narrower terminally (where strongly decurved), about two and a half to three times as long as mandibular rami. Nostrils opening vertically on each side of the broad and flattened mesorhinium, roundish to oblong, fully exposed. Orbital and loreal regions naked. Wing rather short, rounded, the longest primaries extending slightly but decidedly beyond secondaries; fifth and sixth, sixth and seventh, fifth, sixth, and seventh, or fourth, fifth, sixth, and seventh primaries longest, the eighth usually equal to or slightly shorter than secondaries but

sometimes equal to third primary, the ninth shorter than first, the tenth (outermost) about half as long as ninth. Tail longer than wing, excessively graduated, the middle pair of rectrices longest and outer pair about one-third as long (or slightly more), the rectrices narrow, tapering terminally, but rounded at tip. Tarsus longer than middle toe without claw.

*Coloration*.—Head and neck (all round) black or dark chestnut, the hindneck sometimes crossed by a band (more or less broad) of chestnut or crimson; back and wings dark olive-greenish; rump (sometimes upper tail-coverts also) crimson; under parts, posterior to foreneck, yellow, usually crossed in middle portion by a band of red or red and black, sometimes by two bands of black, sometimes suffused in middle portion with chestnut, or with chest and breast crimson, or chest crimson and breast black; thighs often chestnut. (Sexes alike.)

*Range*.—Southeastern Mexico to eastern Peru, Bolivia, southeastern Brazil, and Cayenne. (About 17 species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF PTEROGLOSSUS.

- a. Maxilla smoothly rounded laterally; feathers of pileum blended, not distinctly lanceolate; a chestnut or cinnamon-rufous band across hindneck.
- b. Maxilla dull ivory whitish, blotched along tomia with blackish; abdominal band narrow, black medially, red laterally. (*Pteroglossus torquatus*.)
- c. Larger (wing averaging more than 145, culmen averaging more than 100 in male, more than 95 in female); thighs deeper cinnamon-rufous.
- d. Basal white embossed lamina of bill averaging decidedly narrower; black pectoral spot averaging smaller, often obsolete; back, etc., darker, more bluish or blackish green. (Southeastern Mexico to Panama, except in Yucatan and Campeche.).....*Pteroglossus torquatus torquatus* (p. 342).
- dd. Basal white embossed lamina of bill averaging much wider; black pectoral spot averaging larger, never (?) obsolete; back, etc., lighter, more olivaceous green. (Colombia; Venezuela.)
- Pteroglossus torquatus nuchalis* (extralimital).<sup>a</sup>
- cc. Smaller (wing averaging about 132.3 in male, 120.5 in female; culmen averaging about 82 in male, 75.5 in female); thighs paler cinnamon-rufous. (Yucatan and Campeche.).....*Pteroglossus torquatus erythrozonus* (p. 345).
- bb. Maxilla yellow or orange, without black blotches along tomia; abdominal band very broad, red with an anterior margin of black. (Western Costa Rica to northwestern Colombia.).....*Pteroglossus frantzii* (p. 345).

<sup>a</sup> *Pteroglossus torquatus* (not *Ramphastos torquatus* Gmelin) Sclater and Salvin, Proc. Zool. Soc. Lond., 1879, 537 (Remedios, Antioquia, Colombia).—Salvin and Godman, Ibis, 1880, 175 (Sierra Nevada de Santa Marta, and Minca, Santa Marta, Colombia, 2,000 feet; habits).—Sclater, Cat. Birds Brit. Mus., xix, 1891, 141, part (Santa Marta, and Remedios, Antioquia, Colombia; Puerto Cabello, Venezuela).—Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1896, 555, part (n. Colombia; Venezuela).—Bangs, Proc. Biol. Soc. Wash., xii, 1898, 134 (Santa Marta, Colombia).—Allen, Bull. Am. Mus. N. H., xiii, 1900, 133 (Bonda, Santa Marta).—*Pteroglossus nuchalis* Cabanis, Journ. für Orn., Sept., 1862, 332 (Puerto Cabello, Venezuela; coll. Berlin Mus.).—Cassin, Proc. Ac. Nat. Sci. Phila., 1867, 110.

- aa. Maxilla strongly ridged laterally; feathers of pileum distinctly lanceolate, acuminate; no chestnut or cinnamon-rufous band across hindneck.
- b. Mandible ivory whitish or yellowish passing into dusky terminally; culmen with little, if any, black; larger (wing 158, tail 185.5, culmen 117, tarsus 37.5. (Western Ecuador.).....*Pteroglossus erythropygius* (extralimital).<sup>a</sup>
- bb. Mandible wholly black; culmen (broadly) black, except terminal portion; smaller (wing 142-154.5, tail 153-166.5, culmen 95-118, tarsus 33-34.) (North-western Colombia to northwestern Ecuador.)

*Pteroglossus sanguineus* (p. 347).

### PTEROGLOSSUS TORQUATUS TORQUATUS (Gmelin).

#### COLLARED ARAÇARI.

*Adults (sexes alike).*—Head and neck, all round, uniform glossy, slightly greenish, black, the posterior outline very regular and sharply defined, especially across lower foreneck; back and scapulars uniform glossy dark greenish slate color or greenish slate-black, this color separated from the glossy black of hindneck by a distinct and continuous collar of chestnut or deep cinnamon-rufous; wings and tail plain, slightly glossy, olivaceous-blackish, the remiges and rectrices more decidedly olive; rump and upper tail-coverts bright poppy red or carmine; under parts of body canary or deep sulphur yellow, the chest and breast more or less stained with bright red, center of chest usually with a spot (varying in size) of black, the upper abdomen crossed, from side to side, by a band of black and red, the former mostly in middle portion, the latter predominating (sometimes almost to exclusion of any black) laterally; thighs chestnut or deep cinnamon-rufous; under tail-coverts sulphur yellow more or less streaked or intermixed with light red; under wing-coverts dull pale yellow, tinged with grayish; inner webs on remiges passing on edges into pale grayish yellow, except terminally; maxilla mostly pale grayish yellow, or dull ivory whitish, dusky terminally, shaded with grayish olive or horn color (sometimes pinkish) subbasally, margined at base with a rather narrow, embossed lamina of ivory-whitish, with a series of large dusky blotches along tomia (between the tooth-like projections), and with a broad black stripe on basal half (more or less) of culmen, this sometimes continued, more narrowly, for whole length of culmen; mandible black, margined at base by a white embossed lamina; iris sulphur yellow to orange-yellow; bare orbital space red (venetian red or brick red to poppy red or vermilion); legs and feet greenish olive, olive-green, or sage green

*Young.*—Similar in coloration of to the adults, but bill very different, lacking any sharply defined "pattern," its general color more or less grayish brown or horn color.

<sup>a</sup> *Pteroglossus erythropygius* Gould, Proc. Zool. Soc. Lond., xi, 1843, 15 (locality not given); Zool. Voy. 'Sulphur,' 1844, 45, pl. 28 ("Realejo, Nicaragua"); Mon. Ramphastidæ, 2d ed., 1854, pl. 21 (lower fig.) and text; Sclater, Cat. Birds Brit. Mus., xix, 1891, 143 (Santa Rita, Intac, and Pallatanga, w. Ecuador).



*Adult male*.—Length (skins), 360–477 (422); wing, 135–155 (146.7); tail, 133–174 (154.8); culmen, 88.5–116 (100.6); tarsus, 32–37 (34.7); outer anterior toe, 27–33.5 (30).<sup>a</sup>

*Adult female*.—Length (skins), 359–481 (402); wing, 133.5–153 (145.5); tail, 125.5–170 (156.5); culmen, 83.5–106 (95.1); tarsus, 30.5–37 (34.3); outer anterior toe, 27–32 (29).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (San Andres Tuxtla; Playa Vicente; Jalapa; Uvero; Cosamoalapám; Sochiapa; Tolosa; Buena Vista; Orizaba), Oaxaca (Santa Efigénia; Chimalapa; Cacoprieto; Tapanátepec), Tabasco (Teapa), and Chiapas (Tonalá; Palenque; Huehuetán), and southward through Guatemala (Choctúm; Cobán; between Cobán and Chiséc; Retalhuleu; Savana Grande; Rio Dulce; San Sebastián; Patio Bolas; Mico Mt.; Los Amates, Yzabál; Mazatenango; El Rancho; Guatemala City; Managua), Salvadór, British Honduras (Cayo; Belize; Orange Walk; near Manatee Lagoon), Honduras (Omoa; Chamellicón; Céiba; Yaruca; San Pedro; mouth of Rio Román; Rio Segóvia; Copán), Nicaragua (San Gerónimo, Chinandega; Volcán de Chinandega; Jalapa; Chontales; Pena Blanca; San Emilio; León; Los Sábalos; Sucuyá; Rio Escondido; La Libertád; Matagalpa; Volcán de Momotombo) and Costa Rica

<sup>a</sup> Forty-eight specimens.

<sup>b</sup> Twenty-seven specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Vera Cruz.....	145.2	149.5	97.5	34	29.9
Three adult males from Oaxaca.....	146.5	147.5	98.5	34.7	30.5
One adult male from Tabasco.....	144	157	100.5	34	30.5
Three adult males from Chiapas.....	145.8	160	101.3	34.2	30.2
Three adult males from Guatemala.....	144.5	152.3	103.3	34.2	30.7
Six adult males from Honduras.....	145.2	155.6	102.2	34.7	30.5
Six adult males from Nicaragua.....	146	156.7	100.1	34.2	29.4
Ten adult males from Costa Rica.....	149.5	156.2	104.8	35.8	30
Four adult males from Panama.....	148.2	164	95.4	35.5	30
Ten adult males ( <i>P. t. nuchalis</i> ) from Colombia.....	143.7	160.2	99.5	34.6	30.3
One adult male ( <i>P. t. erythrozonus</i> ) from Campeche.....	135.5	147	82	32	28
Two adult males ( <i>P. t. erythrozonus</i> ) from Yucatan.....	130.7	130.5	81.7	33	27.5
Two adult males from British Honduras.....	140	154	97.2	33.5	29
FEMALES.					
Four adult females from Vera Cruz.....	142.7	144.4	92.1	34	29.1
Two adult females from Oaxaca.....	144	152.2	91.7	32.5	29.7
Two adult females from Chiapas.....	149	153.7	100.7	34.5	29
One adult female from eastern Guatemala.....	137	125.5	92	34	29.5
One adult female from British Honduras.....	135.5	146	83.5	33	27
Two adult females from Honduras.....	145	148.5	90	35	29.5
Two adult females from Nicaragua.....	148.5	153.2	96.2	34.7	29.2
Ten adult females from Costa Rica.....	149	151.5	99.7	34.4	30.2
Three adult females from Panama.....	140.2	156.8	89.8	35.3	28.2
Six adult females ( <i>P. t. nuchalis</i> ) from Colombia.....	141.7	155.7	92.7	34.2	30.2
One adult female ( <i>P. t. erythrozonus</i> ) from Yucatan.....	120	115	75.5	30.5	25.5

(Bebedero; Turrialba; San Carlos; San José; San Miguél; Talamanca; Jiménez; Guápiles; Guácimo; Guayabo; Bonilla; Guayabál; Angostura; Rio Frio; Sarapiquí; Tenório; Cerro Santa Maria; Volcán de Miravalles; Bolsón; La Palma de Nicoya; Liberia; Naranjo de Cartago) to Panamá (Loma del León; David; Laguna del Pita).

[*Ramphastos*] *torquatus* GMELIN, Syst. Nat., i, pt. i, 1788, 354 (based on *Tucana mexicana torquata* Brisson, Orn., iv, 421; *Collared Toucan* Latham, Gen. Synop. Birds, i, pt. i, 330; etc.).—LATHAM, Index Orn., i, 1790, 137.

*Ramphastos torquatus* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxxiv, 1819, 277.

*Pt [eroglossus] torquatus* WAGLER, Isis, 1829, 508 (Tuxtepec and Xacatepec, Vera Cruz).

*Pteroglossus torquatus* STURM, ed. Gould's Mon. Ramphast., 1840, pl. 12 (pt. 2, pl. 2).—GOULD, Mon. Ramphast., ed. 2, 1854, pl. 20 and text.—SCLATER, Proc. Zool. Soc. Lond., 1857, 205 (San Andres Tuxtla, Vera Cruz); 1858, 359 (Omoa, Honduras); 1859, 388 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 326; Cat. Birds Brit. Mus., xix, 1891, 141, part (localities in Vera Cruz; Teapa, Tabasco; Cayo, Belize, and Orange Walk, Brit. Honduras; Choctum, Coban, Retalhuleu, and Sabana Grande, Guatemala; San Pedro, Honduras; Chontales, Nicaragua; Bebedero, Costa Rica; Panama).—MOORE, Proc. Zool. Soc. Lond., 1859, 59 (Honduras; habits).—SCLATER and SALVIN, Ibis, 1859, 135 (Rio Dulce and San Sebastian, Guatemala); Proc. Zool. Soc. Lond., 1864, 366 (Panama; crit.); 1870, 837 (Honduras).—TAYLOR, Ibis, 1860, 119 (Omoa, Honduras).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 299 (Panama); ix, 1868, 129 (Angostura and Turrialba, Costa Rica); Bull. U. S. Nat. Mus., no. 4, 1876, 34 (Santa Efigenia, Oaxaca).—CABANIS, Journ. für Orn., 1862, 331 (Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 362 (Costa Rica).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 110.—SALVIN, Ibis, 1872, 323 (Chontales, Nicaragua).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 46 (San Carlos, Costa Rica); Liste Ois récol. Guat., 1878, 24 (Guatemala).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 401 (La Palma de Nicoya, Costa Rica; habits, etc.); vi, 1884, 388, 407 (Sucuyá and Los Sábalo, Nicaragua).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 163 (Vera Cruz).—ZELEDÓN, Anal. Mus. Nat. Costa Rica, i, 1887, 123 (Naranjo de Cartago, Jiménez, and Liberia, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 591 (Rio Segovia, Honduras).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 518 (Rio Escondido, Nicaragua).—UNDERWOOD, Ibis, 1896, 445 (Volcan de Miravalles, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 555, part (Jalapa, San Andres Tuxtla, Uvero, Cosamaloapam, Playa Vicente and Sochiapa, Vera Cruz; Teapa, Tabasco; Santa Efigenia and Tapanatepec, Oaxaca; Tonalá, Chiapas; Orange Walk, Cayo, and Belize, Brit. Honduras; Savana, Grande, Retalhuleu, Patio Bolas, Choctum, and Rio Dulce, Guatemala; Omoa, San Pedro, and Rio Segovia, Honduras; La Libertad, Matagalpa, Volcan de Chinandega, Volcan de Momotombo, Leon, etc., Nicaragua; San Miguel, Sarapiquí, etc., Costa Rica; David, etc., Panama).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 399, 9 (Laguna del Pita, Panama).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 18 (Loma del Leon, Panama); Bull. Mus. Comp. Zool., xxxix, 1903, 145 (Ceiba and Yaruca, Honduras).—DEARBORN, Pub. 125, Field Mus. Nat. Hist., 1907, 90 (Los Amates, Mazatenango, San José, and bet. El Rancho and Guatemala City, Guatemala).—FERRY, Pub. 146, Field Mus. N. H., 1910, 266 (Guayabo, Costa Rica; habits).—CARRIKER, Amr. Carnegie Mus., vi, 1910, 574 (Costa Rica; habits; crit.).

[*Pteroglossus*] *torquatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 109, part.

- Pteroglossus ambiguus* LESSON, *Traité d'Orn.*, 1831, 178 (no locality mentioned).  
*Pteroglossus regalis* GOULD, *Proc. Zool. Soc. Lond.*, 1834, 75 (Mexico; coll. Zool. Soc. Lond.); *Mon. Ramphast.*, ed. 1, 1834, pl. 14 and text.—BONAPARTE, *Consp. Av.*, i, 1850, 94.  
*Ramphastos discolor* MÜLLER, *Syst. Nat. Suppl.*, 1776, 83 (new name for *R. torquatus* Gmelin).  
*Pteroglossus erythropygius* (not of Gould) LAWRENCE, *Ann. Lyc. N. Y.*, viii, 1867, 178 (David, Chiriqui, w. Panama).—SALVIN, *Proc. Zool. Soc. Lond.*, 1867, 157 (David).

### PTEROGLOSSUS TORQUATUS ERYTHROZONUS Ridgway.

#### YUCATAN ARAÇARI.

Similar to *P. t. torquatus* but much smaller, and color of thighs and under tail-coverts paler (dull cinnamon-rufous instead of chestnut).

*Adult male*.—Length (skins), 333–393 (363); wing, 126.5–135.5 (132.3); tail, 121.5–147 (136); culmen, 75–88.5 (81.8); tarsus, 32–33 (32.7); outer anterior toe, 27–28 (27.3).<sup>a</sup>

*Adult female*.—Length (skin), 308; wing, 120.5; tail, 115; culmen, 75.5; tarsus, 30.5; outer anterior toe, 25.5.<sup>b</sup>

Yucatan (San Felipe; Rio Lagartos; Temáx; Chichen-Itza; Izalám) and Campeche (Apazote).

*Pteroglossus torquatus* (not *Ramphastos torquatus* Gmelin) BOUCARD, *Proc. Zool. Soc. Lond.*, 1883, 455 (Yucatan; habits).—SCLATER, *Cat. Birds Brit. Mus.*, xix, 1891, 141, part (Izalam, Yucatan).—SALVIN and GODMAN, *Biol. Centr.-Am.*, Aves, ii, 1896, 555, part (Izalam).—COLE, *Bull. Mus. Comp. Zool.*, 1, 1906, 130 (Chichen-Itza, Yucatan).

*Pteroglossus torquatus erythrozonus* RIDGWAY, *Proc. Biol. Soc. Wash.*, xxv, May 4, 1912, 88 (Temax, Yucatan; coll. U. S. Nat. Mus.).

### PTEROGLOSSUS FRANTZII Cabanis.

#### FRANTZIUS' ARAÇARI.

*Adult (sexes alike)*.—Head and neck, all round, plain glossy black, becoming more sooty on chin and upper throat; back and scapulars glossy dark greenish olive, separated from the black of hindneck by

<sup>a</sup> Three specimens.		<sup>b</sup> One specimen.				
Locality.		Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.						
Two adult males from Yucatan.....		130.7	130.5	81.7	33	27.5
One adult male from Campeche (Apazote).....		135.5	147	82	32	28

Three specimens from Yucatan with sex undetermined measure as follows: Wing, 135.5–140; tail, 134.5–149; culmen, 75.5–89.5; tarsus, 31–32; outer anterior toe, 26.5–27.5. There is the same great amount of individual variation in this form as in *P. t. torquatus*, but as a rule the under parts are more extensively suffused with red and there is usually less of black, this being sometimes practically wanting from the abdominal band as well as from the breast.



a collar of dark chestnut; wings and tail plain dark and dull olive-greenish; rump and upper tail-coverts bright poppy red or carmine; under parts of body sharply divided into three differently colored areas, of which the anterior one, covering chest or breast, is canary yellow, much intermixed with bright red (especially next to black of foreneck), the chest with a central spot of black; the next one a broad band across upper abdomen of bright red margined anteriorly with black, or a line of black spots; the third, covering whole of lower abdomen, immaculate canary yellow; thighs chestnut or deep cinnamon-rufous; under tail-coverts mixed yellow and light chestnut; under wing-coverts pale smoky yellowish, the inner webs of remiges largely pale wood brownish; maxilla with greater part bright orange, paling into orange-yellow (on sides) proximally, the subbasal inch, more or less, clear olive, the tomial serrations grayish white with detached streaks of dusky immediately above, the proximal two-thirds, more or less, of culmen black (this forming a wedge-shaped area), the base of the maxilla margined by an embossed, more or less distinctly sulcate, lamina of pale buffy yellow or yellowish white; mandible black, becoming brownish terminally, margined basally and around angle of chin by an embossed pale yellowish or whitish lamina, like that of maxilla; bare orbital space dusky in front of and immediately around eye; otherwise deep orange-red or vermilion; iris lemon yellow; legs and feet yellowish olive-green.<sup>a</sup>

*Young*.—Similar to adults but coloration duller, without distinct, if, any, black anterior margin to the red abdominal band and with the bill brownish and dull yellowish, without the sharply defined "pattern" of adults.

*Adult male*.—Length (skins), 395–478 (432); wing, 147–159 (154.8); tail, 147–163.5 (158.1); culmen, 96.5–123 (115.6); tarsus, 35–38 (36.4); inner anterior toe, 31–34 (32.3).<sup>b</sup>

*Adult female*.—Length (skins), 393–412 (402); wing, 139–153 (147.7); tail, 152.5–158 (155); culmen, 101–107 (104.3); tarsus, 34–37 (35.9); inner anterior toe, 31–33.5 (32.1).<sup>c</sup>

<sup>a</sup> Fresh colors of specimens shot by the author near Pigres, Costa Rica.

<sup>b</sup> Eleven specimens.

<sup>c</sup> Four specimens.

Locality.	Wing.	Tail.	Culmen (chord).	Tarsus.	Inner anterior toe.
MALES.					
Seven adult males from Costa Rica.....	156.7	158.9	116.9	36.9	32.9
Four adult males from western Panama.....	151.6	154.7	110.9	35.6	31.1
FEMALES.					
Two adult females from Costa Rica.....	144.2	154.5	103	35.5	32.2
Two adult females from western Panama.....	151.2	155.2	107	36.2	32

Western Costa Rica (Monte Redondo; San Mateo; San Carlos; San José; Las Trojas; Angostura; Aguacate Mts.; Santo Domingo de San Mateo; Pigres; Boruca; El Pozo del Rio Grande; Pozo Azul de Pirris) and western Panama (Divala; David; Boquete; Bugaba; Volcan de Chiriquí).

*Pteroglossus frantzii* CABANIS, "Sitz. Nat. Ges. Freunde Berlin, Nov., 1861" (Aguacate, w. Costa Rica; coll. Berlin Mus.); Journ. für Orn., 1862, 333 (Aguacate, Costa Rica; crit.).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 110.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 129 (San José and Angostura, Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 362 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 211 (Bugaba and Volcan de Chiriqui, Panama; crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 47 (San Carlos, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Pozo Azul de Pirris, Las Trojas, and Monte Redondo, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xix, 1891, 142 (San José, Costa Rica; Bugaba, s. slope Volcan de Chiriqui, and Veragua, Panama).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 49 (Boruca, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 557 (Aguacate Mts., San Mateo, San José, Angostura, San Carlos, Pozo Azul, Las Trojas, and Monte Redondo, Costa Rica; Bugaba, Volcan de Chiriqui, and Veragua, Panama).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 32 (Boquete, Chiriqui, 3,000 ft.).—RIDGWAY, Condor, vii, 1905, 152, 155, in text (Santo Domingo de San Mateo and Pigres, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 575 (Costa Rica; crit.).

[*Pteroglossus*] *frantzii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 109.

### PTEROGLOSSUS SANGUINEUS Gould.

#### RED-RUMPED ARAÇARI.

Similar to *P. erythropygius* Gould,<sup>a</sup> but whole mandible (except basal lamina) black, culmen extensively black, and size smaller.

*Adults (sexes alike).*—Head and neck, all round, glossy, slightly bluish, black; back, scapulars, and wing-coverts glossy dark greenish or olivaceous slate-black, not separated from black of hindneck by a collar of chestnut (as in *P. torquatus* and *P. frantzii*); remiges and rectrices blackish olive, the outer webs of primaries more olive-greenish or olive-grayish; rump and upper tail-coverts bright poppy red or carmine; under parts of body canary yellow, more or less stained with bright red, especially on chest, which (usually at least) has a central spot of black, the upper abdomen crossed by a band of mixed black and bright red, the latter predominating laterally, the former centrally; thighs chestnut; under tail-coverts light yellow, streaked or longitudinally intermixed with light red; under wing-coverts very pale yellowish gray or grayish yellow, the inner webs of remiges mostly similar but more grayish; maxilla mostly ocher- or buff- yellowish, relieved by a broad black stripe covering greater part of culmen and another (of varying extent) on side, immediately below the lateral ridge; mandible black, more brownish terminally; both

<sup>a</sup> See p. 342.

maxilla and mandible with a basal embossed lamina of whitish, this including lower edge of the mandibular rami; bare orbital space dusky (in dried skins); iris yellow; legs and feet buffy olive (in dried skins), greenish in life.

*Adult male*.—Length (skin), 430–470 (450); wing, 151–155.5 (153.6); tail, 155.5–166.5 (162.9); culmen, (chord), 101.5–118 (108.4); tarsus, 33–34 (33.7); outer anterior toe, 28–32.5 (29.7).<sup>a</sup>

*Adult female?*—Length (skin), 450; wing, 142–152 (147); tail, 153–154.5 (153.7); culmen, 95–104 (99.5); tarsus, 33.5; outer anterior toe, 29.<sup>b</sup>

Northwestern Colombia, near Isthmus of Panama (Rio Truando); western Colombia (Naranjito, Rio Dagua); northwestern Ecuador (Paramba).

A specimen from northwestern Ecuador (Paramba) is precisely like those from the Rio Truando in coloration, and essentially the same in measurements.

*Pteroglossus erythropygius* (not of Gould, 1843) GOULD, Mon. Ramphastidæ, 2d ed., 1854, pl. 21 (upper fig.).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 136 (Rio Truando, Colombia).

*Pteroglossus sanguineus* GOULD, Mon. Ramphastidæ, 2d ed., 1854, in text to pl. 21 (locality unknown; coll. J. Gould).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 109 (Rio Truando, Colombia; crit.).—SCLATER, Cat. Birds Brit. Mus., xix, 1891, 143 (n. Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 557 (Rio Truando).

#### Genus SELENIDERA Gould.

*Selenidera* GOULD, Icon. Av., pt. 1, 1837, text to pl. 7. (Type, *Pteroglossus gouldii* Gould.)

*Piperivorus* BONAPARTE, Ateneo Italiano, ii, 1854, 119 (Consp. Vol. Zygod., 1854, 4). (Type, *Ramphastos piperivorus* Linnaeus.)

*Ramphastoides* CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 117. (Type, *Selenidera spectabilis* Cassin.)

Medium-sized to rather small Ramphastidæ (length about 275–395 mm.) with the graduated tail not longer (usually shorter) than wing, auricular feathers elongated and yellow, no red on rump or upper tail-coverts (the under tail-coverts, however, red or partly so), throat, chest, and breast uniform black in males, chestnut-tawny or gray in females, the adult male usually with a yellow or orange flank-patch of elongated feathers.

Bill less than half to three-fourths as long as wing, deeper than wide at base, the culmen arched (more or less) from base, broadly rounded basally, narrowly rounded terminally, where strongly decurved, the tip of maxilla strongly uncinat; sides of bill smooth, without indication of ridge or groove or lateral compression or concavity of maxilla; gonys as long as mandibular rami to twice as long, narrowly rounded,

<sup>a</sup> Four specimens.

<sup>b</sup> Two specimens.



usually medially grooved basally, the tip of mandible distinctly decurved; tomial serrations variable but always distinct. Nostrils opening vertically, completely exposed, roundish, widely separated by the broad mesorhinium. Orbits and lores completely and extensively naked. Wing rather short, rounded, with longest primaries extending decidedly beyond secondaries; fifth and sixth or sixth and seventh primaries longest, the eighth equal to or (usually) longer than longest secondaries, the ninth shorter than first, the tenth (outermost) about half as long as ninth. Tail usually decidedly shorter than wing (about as long in *S. spectabilis*), strongly graduated, the middle pair of rectrices longest, the outer pair slightly more than half to much less than half as long, the rectrices not distinctly if at all narrowed terminally, rounded at tip. Tarsus equal to or longer than middle toe with claw.

*Coloration*.—Head and neck, together with chest and whole breast (sometimes upper abdomen also) uniform black in males, chestnut or chestnut-tawny or slate-grayish in females, relieved by a conspicuous auricular tuft of yellow or orange-yellow elongated feathers; back, wings, rump, and upper tail-coverts plain olive-green, usually separated from black of hindneck by a band or collar of yellow or orange-yellow; rectrices usually tipped with cinnamon-rufous or chestnut; under tail-coverts crimson; thighs chestnut; adult males with a conspicuous flank-patch of yellow or yellowish orange.

*Range*.—Nicaragua to eastern Peru, southeastern Brazil, and Cayenne. (Seven species.)

This genus, as characterized above, may possibly require subdivision. *S. spectabilis* (the only species occurring in Central America), type of *Ramphastoides*, differs from all the other known species in its relatively longer bill and tail, absence of yellow collar across hindneck and of cinnamon-rufous tip to rectrices, and in comparatively slight difference between the sexes in coloration. However, between *S. spectabilis* and *S. maculirostris*, which represent the two extremes in the group <sup>a</sup> the transition seems nearly complete (except as to color characters) through *S. gouldi* (nearest *S. maculirostris*), *S. langsdorffi*, and *S. piperivora*, the last named being much more nearly like *S. spectabilis* in size and shape of the bill than *S. maculirostris*.

### SELENIDERA SPECTABILIS Cassin.

#### CASSIN'S ARAÇARI.

*Adult male*.—Head and neck, all round, chest, breast, and abdomen uniform glossy black, the side of head ornamented by a conspicuous auricular patch of lemon or canary yellow elongated feathers; back, scapulars, wings, rump, and upper tail-coverts plain olive-

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<sup>a</sup> I have not seen *S. reinwardti* (Wagler) nor *S. nattereri* Gould.

green; tail bluish slate color, the rectrices with black shafts and indistinctly edged basally with olive-green (the lateral rectrices inclining to olive-green on outer web), the under surface of tail dull black or slate-black; a conspicuous patch of orange-yellow on flanks; thighs chestnut; shorter under tail-coverts bright poppy red, the longer ones chestnut; under wing-coverts pale dull yellow (primrose or straw yellow), the remiges edged (not sharply) with the same, except terminally; upper half of maxilla dull greenish-yellow, the lower half passing from light olive sub-basally into nearly black terminally, the basal embossed lamina black; mandible blackish passing into light olive basally; bare orbital space dusky (in dried skins); legs and feet dusky (in dried skins); length (skins), 350-392 (370); wing, 127.5-140.5 (134); tail, 115-133 (124.2); culmen, 88.5-104.5 (94.9); tarsus, 33-36.5 (34.9); outer anterior toe, 27-30 (28.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but pileum and hind-neck bright to dark chestnut and auricular region black instead of yellow, the feathers not elongated; upper half (approximately) of maxilla apple green, paler and more glaucous terminally, tinged with yellow basally; the lower portion clear olive basally passing into black terminally; mandible clear olive basally passing into black terminally; both maxilla and mandible with a basal embossed, more or less distinctly sulcate, lamina of black; bare orbital space turquoise blue above eye, emerald green in front of eye, orange-yellow below eye (passing into greenish toward eyelid), the postocular portion bright greenish yellow; iris brownish red; legs and feet plumbeous-blue, the soles pale yellowish; <sup>b</sup> length (skins), 335-383 (359); wing, 132-140.5 (136.2); tail, 111-129 (122.5); culmen, 81.5-89.5 (85.5); tarsus, 33.5-37 (34.8); outer anterior toe, 26-30 (27.9).<sup>c</sup>

<sup>a</sup> Seven specimens.

<sup>b</sup> Fresh colors of specimens shot by the author in Costa Rica. Fresh colors of the unfeathered parts of the adult male probably do not differ materially, though dried skins indicate that the adult male probably has the upper half of the mandible decidedly more yellowish.

<sup>c</sup> Eleven specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Outer anterior toe.
MALES.					
Six adult males from Costa Rica.....	135	125.7	94.9	35.2	28.5
One adult male from Panama.....	128	115	95	33	27
FEMALES.					
Seven adult females from Costa Rica.....	136.2	123.1	85.8	34.7	28.2
Two adult females from Panama.....	138	125	86.5	35.7	28.5
Two adult females from northern Colombia (Truando Falls)...	134.2	117.7	83.5	34	26.2

Caribbean Slope of Nicaragua (Chontales; La Libertád; Santo Domingo) and Costa Rica (Naranjo; Tucurrique; Rio Súcio; Bonilla; Guayabo; Juan Viñas; Valza) and southward through Panamá (Lion Hill; Panamá; Boquete de Chitra; Calovévora, Cocuyos, Santa Fé, Santiago, and Cordillera de Tolé, Veragua) to northwestern Colombia (Truando Falls).

*Selenidera spectabilis* CASSIN, Proc. Ac. Nat. Sci. Phila., ix, 1857, 214 (Cocuyos de Veragua, Panama; coll. Ac. Nat. Sci. Phila.); x, 1858, 178; 1867, 117; Journ. Ac. Nat. Sci. Phila., iv, 1858, 5, pl. 1.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 474 (Panama); ix, 1868, 129 (Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 366 (Panama).—SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (Santa Fe, Santiago, and Cordillera de Tolé, Veragua, Panama); 1870, 211 (Calovevora, Veragua); Ibis, 1872, 313, 323 (Chontales, Nicaragua).—FRANTZIUS, Journ. für Orn., 1869, 362 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 47 (Naranjo, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xix, 1891, 153 (Tucurrique, Costa Rica, etc.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1878, 123 (Rio Súcio, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 558 (La Libertad, Santo Domingo, etc., Nicaragua; Naranjo, etc., Costa Rica; Cocuyos de Veragua, Lion Hill, etc., Panama; Rio Truando, Colombia).—RIDGWAY, Condor, vii, 1905, 156, in text (Bonilla, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 575 (Costa Rica; habits).

[*Selenidera*] *spectabilis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 109.

### Genus AULACORHYNCHUS Gould.

*Aulacorhynchus* GOULD, Proc. Zool. Soc. Lond., 1834, 147. (Type; *Pteroglossus sulcatus* Swainson.)

*Aulacoramphus* (emendation) GRAY, List Gen. Birds, 1840, 50.

*Aulacorhamphus* (emendation) SCLATER, Proc. Zool. Soc. Lond., 1856, 308; Cat. Birds Brit. Mus., xix, 1891, 153.

*Aulacops* (emendation) CABANIS, Journ. für Orn., x, Sept., 1862, 331. (New name for *Aulacoramphus* Gray).

*Ramphoxanthus* BONAPARTE, Ateneo Italiano, ii, 1854, 119 (Consp. Volucr. Zygód., 1854, 4). (Type, *Pteroglossus albivitta* Boissoneau.<sup>a</sup>)

Rather small Ramphastidæ (length about 290–370 mm.) with maxilla more or less strongly concave laterally and general coloration green.

Bill about three-fifths as long as wing, broad basally (its width at base greater than its depth at same point), gradually narrowed anteriorly; culmen strongly arched from base, broadly rounded, strongly decurved terminally, the tip of maxilla conspicuously uncinatè; gonys as long as or decidedly longer than mandibular rami, broadly rounded, more or less sulcate basally, distinctly to very slightly decurved terminally; maxilla distinctly concave or sunken laterally; base of both maxilla and mandible with a raised, enamel-

<sup>a</sup> In Notes Orn. Coll. Delattre, 1854, 84, footnote, the only species mentioned by Bonaparte is *Pteroglossus prasinus* Lichtenstein.



like basal margin (white or yellowish). Nostrils opening vertically, rounded, rather small, partly covered by latero-frontal feathers, widely separated by the broad, more or less arched, mesorhinium, sometimes preceded by a short prenasal groove, and margined beneath, or exteriorly, by a short subnasal ridge. Loral region, and more or less of orbital region naked. Wing moderate or rather short, the longest primaries slightly but distinctly exceeding longest secondaries; fourth, fifth and sixth, or fourth and fifth primaries longest, eighth slightly longer to slightly shorter than secondaries, ninth a little more than two-thirds as long as longest, tenth (outermost) slightly to decidedly more than half as long as ninth. Tail shorter than wing, graduated, the middle pair of rectrices longest, the outer pair slightly more than half as long; the rectrices tapering terminally, with tip narrowly rounded. Tarsus decidedly longer than middle toe with claw.

*Coloration*.—General color uniform green, the pileum and hindneck more olivaceous, the chin and throat white, grayish, or blue; under tail-coverts and broad tips to rectrices cinnamon-rufous or chestnut. (Sexes alike.)

*Range*.—Southern Mexico to Peru, Bolivia, and British Guiana. (Fifteen species.)

The above description of generic characters is taken from two of the three Central American species and two Colombian species, *A. albivittus* (Boissonneau) and *A. hæmatopygius* Gould, that may be considered as truly congeneric. The type of the genus *A. sulcatus* (Swainson), I have not seen, but judging from the specific name I suspect that it may be related to one or another of the South American species which I have, for the present at least, excluded as being probably not congeneric with the Central American species. Unfortunately I have been able to examine only seven of the fifteen recognized species, and, therefore, am not able to decide at the present time whether the genus, as generally understood, should be subdivided or not. Certainly three extralimital species which I have been able to examine are very different in the structure of the bill, not only from the Central American species and *A. albivittus* but, to a greater or less extent, from one another. The one coming nearest to the latter is *A. derbianus* Gould, from Ecuador, Peru, and Bolivia; but this differs decidedly in having the nostrils situated much lower (about one-fourth the distance from the upper surface of the mesorhinium to the maxillary tomium) and preceded by a very distinct prenasal sulcus which extends for more than the basal half of the maxilla, the culmen being very broad and flat, with distinct lateral edges from which the sides of the maxilla drop vertically to the

prenasal groove. In *A. erythrognathus* Gould, from Venezuela, the nostrils are still lower (at least half way from upper surface of the mesorhinium to maxillary tomium), the subnasal portion of the maxilla being thus very narrow, while the bill is strongly arched, the subnasal portion of the maxilla and the sides of the mandible strongly concave, the nostrils narrow and concealed by the latero-frontal feathering, the orbits feathered (only the loreal region being naked), the base of the bill without the raised, differently colored margin, the mesorhinium transversely corrugated, and the rectrices without the usual cinnamon-rufous or chestnut tip. *A. cæruleicinctus* (D'Orbigny), from Bolivia, is somewhat like the last in structure of the bill, but this is much less strongly arched, the subnasal portion of maxilla broader, the mesorhinium not corrugated, the mandibular rami relatively much shorter, and the coloration of the bill quite unique in this group, being bluish horn color passing into dull yellowish white terminally and along greater extent of commissure. It is also the only species (among those examined) having red on the rump.

## KEY TO THE SPECIES OF AULACORHYNCHUS.

- a. Throat and anterior portion of malar region white.
  - b. Black on basal portion of culmen broadly confluent with proximal portion of black tomial area; basal embossed lamina of bill very broad and prominent; forehead much paler than crown. (Southwestern Mexico.)  
*Aulacorhynchus wagleri* (p. 354).
  - bb. Black on basal portion of culmen widely separated from that of tomial area; basal embossed lamina of bill narrow, not prominent; forehead concolor with crown. (Southeastern Mexico to northern Nicaragua.) (*Aulacorhynchus prasinus*.)
  - c. Wing and tail longer (wing 123–138, averaging 133; tail 114.5–130.5, averaging 121, in male); green of under parts usually more bluish, often tinged with blue on chest; white of throat purer (less yellowish); chestnut of under tail-coverts paler. (State of Vera Cruz, Mexico, to Guatemala.)  
*Aulacorhynchus prasinus prasinus* (p. 355).
  - cc. Wing and tail shorter (wing 120.5–123.5, averaging 122.1, tail 106–111, averaging 108, in male); green of under parts more yellowish (never tinged with blue); white of throat more yellowish; chestnut of under tail-coverts darker. (Honduras to northern Nicaragua.)  
*Aulacorhynchus prasinus virescens* (p. 357).
- aa. Throat and anterior portion of malar region deep dull blue. (*Aulacorhynchus cæruleogularis*.)
  - b. Prenasal portion of maxilla chestnut; slightly larger, especially the bill. (Costa Rica and western Panama.)  
*Aulacorhynchus cæruleogularis cæruleogularis* (p. 357).
  - bb. Prenasal portion of maxilla deep black; slightly smaller. (Southeastern Panama.)  
*Aulacorhynchus cæruleogularis cognatus* (p. 359).

## AULACORHYNCHUS WAGLERI (Sturm).

## WAGLER'S TOUCANET.

Much like *A. prasinus*, but color of pileum much lighter and more yellowish, becoming conspicuously paler on forehead; white of throat more restricted and passing into pale grayish blue posteriorly; maxilla with black tomial stripe much narrower anteriorly, and basally confluent with the black on base of culmen, and embossed basal lamina much wider, very strongly sulcate.

*Adults (sexes alike).*—Pileum and hindneck light yellowish, or ochreous, olive-green, passing into pale dull yellowish or dull yellowish white on forehead and into yellowish grass green on rest of upper parts, the terminal portion of inner secondaries more bluish green, the rectrices passing into dull blue distally and broadly tipped with chestnut; outer webs of primaries dull black or bluish dusky distally; auricular region light yellowish olive-green; anterior portion of malar region, chin, and upper throat dull white, passing into pale grayish blue on lower throat, this into light green on under parts of body, which are more or less tinged with blue or bluish green medially, the sides decidedly more yellowish green; under tail-coverts light chestnut or deep cinnamon-rufous; under wing-coverts pale dull yellow, the inner webs of remiges (except distally) passing on edge into dull primrose or pale straw yellow; mandible black (the extreme tip usually more brownish), with a basal V- or U-shaped embossed, sometimes sulcate, lamina of dull yellow or yellowish white; maxilla, below nostrils, with a very broad basal, embossed, strongly longitudinally sulcate lamina of pale brownish yellow, the basal portion otherwise black, the black extending anteriorly for a greater or less distance over culmen (usually covering less than basal third, and, rather narrowly, along tomium nearly to tip, the rest of maxilla greenish yellow; iris brown?; bare orbital space dusky brownish (in dried skins); legs and feet grayish or olivaceous dusky (in dried skins).

*Adult male.*—Length (skins), 350–387 (367); wing, 123.5–132.5 (128.5); tail, 113–128 (120.4); culmen, 73–80.5 (76.4); tarsus, 33.5–35.5 (34.1); outer anterior toe, 25–27 (26.1).<sup>a</sup>

*Adult female.*—Length (skins), 342–357 (351); wing, 122–136 (129.1); tail, 115.5–126 (119.5); culmen, 61.5–76 (68.3); tarsus, 32–35 (33.2); outer anterior toe, 26–28 (26.7).<sup>b</sup>

Southwestern Mexico, in States of Guerrero (Amula; Omilteme) and western Oaxaca (Sacátepec; Pluma).

*Pteroglossus pavoninus* (not of Wagler, 1829) GOULD, Proc. Zool. Soc. Lond., 1835, 158 (Mexico); Mon. Ramphast., ed. 1, 1834, pl. 30.

*Aulacorhamphus pavoninus* SALVIN and GODMAN, Ibis, April, 1889, 240 (Amula, Guerrero, and Sacatepec, Oaxaca; crit.).

<sup>a</sup> Seven specimens.

<sup>b</sup> Five specimens.



*Pteroglossus wagleri* STURM, ed. Gould's Mon. Ramphast., 1841, pl. 16 (heft 2, pl. 6).

*Aulacorhamphus wagleri* GOULD, Mon. Ramphast., ed. 2, 1854, pl. 48 and text.

*Aulacorhamphus wagleri* SCLATER, Proc. Zool. Soc. Lond., 1859, 388 (Sacatepec, Oaxaca); Cat. Birds Brit. Mus., xix, 1891, 157 (Sacatepec; Amula, Guerrero).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 120.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 560.

[*Aulacorhamphus*] *wagleri* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 109.

*A[ulacorhynchus] wagleri* CABANIS, Journ. für Orn., 1862, 331.

### AULACORHYNCHUS PRASINUS PRASINUS (Gould).

#### EMERALD TOUCANET.

*Adults (sexes alike).*—Pileum and hindneck plain greenish olive or olive-green (sometimes inclining to brownish olive-green), passing into nearly pure grass green on back, scapulars, wings, rump, upper tail-coverts, and proximal portion of tail, the green into greenish blue or bluish green on terminal portion of inner secondaries (especially their inner webs and on distal portion of rectrices, the latter broadly tipped with chestnut or deep cinnamon-rufous; outer webs of primaries dark dull bluish distally; superciliary region sometimes tinged with blue or bluish green; suborbital region, anterior portion of malar region, chin, and upper and middle portions of throat dull white; auricular region and sides of neck yellowish green; lower throat, foreneck, and under parts of body plain light green, usually more or less tinged with bluish green anteriorly and medially, the sides more or less strongly washed with yellowish green; under tail-coverts chestnut or deep cinnamon-rufous; under wing-coverts pale dull greenish yellow; inner webs of remiges (except distally) passing into pale dull yellowish on edges; mandible black, usually paler and more brownish at tip, the base and more or less of the lower edge of rami with an embossed, often longitudinally sulcate, margin of dull yellow or yellowish white; maxilla mostly greenish yellow, with an arched tomial stripe of black (widest anteriorly) and with a supero-basal area of black covering basal portion of culmen and the subnasal region, on the former passing anteriorly into or succeeded by a more or less extensive area of chestnut; iris brown?; bare orbital space dusky brownish (in dried skins); legs and feet dusky olive (olive-grayish or grayish olive-green in life?).

*Young.*—Similar in coloration to adults but duller, especially the green of under parts, and bill without sharply defined "pattern," the maxilla yellowish terminally (dusky toward tomia), brownish basally.

*Adult male.*—Length (skins), 348–392 (365); wing, 123–138 (133); tail, 114.5–130.5 (121); culmen, 66–81.5 (74); tarsus, 32.5–36.5 (31.1); outer anterior toe, 24–29.5 (26.2).<sup>a</sup>

<sup>a</sup> Twelve specimens.

*Adult female*.—Length (skins), 310–375 (342); wing, 123.5–127 (125.4); tail, 106–120.5 (113); culmen, 58–74 (63.4); tarsus, 33–35 (34); outer anterior toe, 23.5–26 (25.1).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova, Jalapa, Miradór, Orizaba; Cofre de Perote; Coátepec; Huatusco; Hacienda Tortugas; Zentla; Rio Juan Martín), Oaxaca (Tonaguía; Tehuántepec; Chimalapa), and Chiapas (Pinabete), and southward through Guatemala (Cobán; Cobán to Chiséc; Rasché; Calderas, Volcán de Fuego; Chilasco; Cerro Zuñil; Las Nubes; Totonicapám; Tecpám; Gualán; San Marcos). British Honduras?<sup>a</sup> Salvadór (Volcán de San Miguél)?<sup>b</sup>

(?) [*Ramphastos*] *pavoninus* GMELIN, Syst. Nat., i, pt. i, 1788, 353 (Mexico; based on *Tucana mexicana viridis* Brisson, Orn., iv, 423; etc.).

(?) *Pt[eroglossus]* *pavoninus* (not *Ramphastos pavoninus* Gmelin?) WAGLER, Isis, 1829, 507 (Valle Real, Mexico; coll. Berlin Mus.; see Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1896, 560, 561).

*Pteroglossus prasinus* GOULD, Proc. Zool. Soc. Lond., 1834, 78 (Mexico); Mon. Ramphast., ed. 1, 1834, pl. 29.—STURM, ed. Gould's Mon. Ramphast., 1841, pl. 6 (pt. i, pl. 6).

[*Aulacoramphus*] *prasinus* BONAPARTE, Consp. Av., i, 1850, 96.

*Aulacoramphus prasinus* GOULD, Mon. Ramphast., ed. 2, 1854, pl. 47 and text.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 120.—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 561 (temperate region, Vera Cruz).—BOUCARD, Liste Ois. récol. Guat., 1878, 24 (Guatemala).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 163 (Jalapa, Vera Cruz).

*Aulacorhamphus prasinus* SCLATER, Proc. Zool. Soc. Lond., 1856, 308 (Cordova, Vera Cruz); 1859, 368 (Jalapa); 1864, 177 (near City of Mexico); Cat. Am. Birds, 1862, 328 (Guatemala); Cat. Birds Brit. Mus., xix, 1891, 156 (Cofre de Perote, Coatepec, Huatusco, Orizaba, etc., Vera Cruz; Tonaguia, Oaxaca; Brit. Honduras; Coban, Rasché, Volcan de Fuego, and Calderas, Guatemala).—SCLATER and SALVIN, Ibis, 1859, 135 (Calderas and Vera Paz, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 559, part (Valle Real, Mirador, Cofre de Perote, Hacienda Tortugas, Zentla, Rio Juan

<sup>a</sup> Four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Six adult males from Vera Cruz.....	129.2	118.4	73.1	34.1	25.7
One adult male from Oaxaca.....	138	128	74	35	27.5
Five adult males from Chiapas (2) and Guatemala (3).....	132.5	122.2	74.6	33.9	26.6
Four adult males from northern Nicaragua ( <i>A. p. virescens</i> ).....	122.1	108	74.7	34.4	26.2
FEMALES.					
Two adult females from Vera Cruz.....	123.7	107.5	67	34	24.7
One adult female from Oaxaca.....	127	116.5	58	33	25
One adult female from Chiapas.....	127	120.5	61.5	35	26
One adult female from Honduras ( <i>A. p. virescens</i> ).....	119	104.5	58	34	26
Four adult females from northern Nicaragua ( <i>A. p. virescens</i> )....	121.2	108	63.5	32.5	24.9

<sup>b</sup> Specimens from British Honduras and Salvador not examined.

Martin, etc., Vera Cruz; Tonagua, Oaxaca; Brit. Honduras; Chilasco, Cerro Zuñil, Las Nubes, Totonicapam, etc., Guatemala; Volcan de San Miguel, Salvador).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 90 (Tecpan, Guatemala, 9,500 ft.).

[*Aulacorhamphus*] *prasinus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 109.

*Aulacorhynchus prasinus* CABANIS, Journ. für Orn., 1862, 331.

### AULACORHYNCHUS PRASINUS VIRESCENS Ridgway.

#### SOUTHERN EMERALD TOUCANET.

Similar to *A. p. prasinus* but smaller (except bill and feet), with tail relatively much shorter; chestnut of under tail-coverts deeper; green of breast, etc., more yellowish (the chest never tinged with blue), and white of throat more yellowish, especially next to green of lower foreneck.

*Adult male*.—Length (skins), 331–340 (334); wing, 120.5–123.5 (122.1); tail, 106–111 (108); culmen, 71–81 (74.7); tarsus, 33.5–35 (34.4); outer anterior toe, 25–27.5 (26.2).<sup>a</sup>

*Adult female*.—Length (skins), 308–312 (309); wing, 117.5–126 (120.8); tail, 104.5–111 (107.1); culmen, 58–67 (62.4); tarsus, 31.5–33.5 (32.5); outer anterior toe, 24–26 (25.1).<sup>b</sup>

Honduras (San Pedro; Chasniguas) and northern Nicaragua (Ocotál, Matagalpa, and San Rafael del Norte).

*Aulacorhamphus prasinus* (not *Pteroglossus prasinus* Gould) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (Honduras).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 471 (Chasniguas, Honduras).—SALVIN and GODMAN, Ibis, 1892, 327 (Matagalpa, n. Nicaragua; crit.); Biol. Centr.-Am., Aves, ii, 1896, 559, part (San Pedro, Honduras; Matagalpa, Nicaragua).

*Aulacorhynchus prasinus virescens* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 88 (Chasniguas, Honduras; coll. U. S. Nat. Mus.).

### AULACORHYNCHUS CÆRULEOGULARIS CÆRULEOGULARIS (Gould).

#### BLUE-THROATED TOUCANET.

*Adults (sexes alike)*.—Pileum and hindneck plain brownish olive, sometimes inclining to olive-green; rest of upper parts plain grass green, the rectrices passing into dull bluish green or greenish blue distally and broadly tipped with deep cinnamon-rufous or chestnut; suborbital region, anterior portion of malar region, chin, and throat, plain dull dark blue, the color brighter along posterior margin of the blue area, darker and duller on chin; rest of under parts plain light yellowish green (between apple green and bice green), the under tail-coverts deep cinnamon-rufous or chestnut; maxilla with tomial portion (broadly toward base) and an elongated patch on basal or sub-basal portion of the culmen black, the basal portion connecting the

<sup>a</sup> Four specimens, from northern Nicaragua.

<sup>b</sup> Five specimens.



two black areas (sometimes basal portion of culmen also) chestnut, the rest of maxilla yellow, with green on middle portion of culmen (more or less extensively) and along edge of middle portion of black tomial area; mandible black, with a basal V-shaped area of white; base of maxilla, below nostril, with an embossed, enamel-like, usually sulcate, bar of white, yellowish white, or pale yellow; iris dark brown; orbits dusky slate, with a crescentic space of pale olive-gray beneath eye; legs and feet light grayish olive-green.<sup>a</sup>

*Young*.—Exactly like adults in coloration, but texture of plumage different, and coloration of bill duller, with "pattern" less distinct.

*Adult male*.—Length (skins), 283–305 (294); wing, 115–126 (122.4); tail, 98–109.5 (104.4); culmen, 62.5–73 (66.8); tarsus, 31–35 (33.2); outer anterior toe, 23.5–26 (24.7).<sup>b</sup>

*Adult female*.—Length (skins), 257–311 (267); wing, 115–126.5 (120.1); tail, 95–108 (100); culmen, 52–61 (57.2); tarsus, 31.5–34 (32.9); outer anterior toe, 23–26.5 (24.7).<sup>c</sup>

Highlands of Costa Rica (Naranjo, Navarro, Cartago, and Birris, Cartago; La Palma de San José; Volcán de Irazú; Volcán de Turrialba; Volcán de Barba; Coliblanco; Guayabo; Monte Redondo; Barranca, Volcán de Poás; Copéy, Dota, and Santa Maria, Dota) and western Panamá (Boquete; Calovévora; Santa Fé; Calobre, south slope of Volcán de Chiriquí).

*Aulacorhamphus cæruleogularis* GOULD, Proc. Zool. Soc. Lond., xxi, no. ccl, July 25, 1854, 45 (Veragua, Panama); Ann. and Mag. N. H., 2d ser., xvi, 1855, 390 (Veragua).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1867, 121.—SALVIN, Proc. Zool. Soc. Lond., 1867, 157 (Santa Fe de Veragua, Panama); 1870, 211 (Calovevora, Veragua).

*Aulacorhamphus cæruleogularis* GOULD, Mon Ramphast., ed. 2, 1854, pl. 51 and text.—BOUCARD, Proc. Zool. Soc. Lond., 1878, 47 (Naranjo, Costa Rica.)

*Aulacorhamphus cæruleigularis* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 129 (Barranca, Dota, and Turrialba, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 362 (Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 123 (Naranjo de Cartago, Navarro de Cartago, Cartago, Volcan de Irazú, and Monte Redondo, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xix, 1891, 159 (San José, Costa Rica; Calobre, s. slope Volcan de Chiriqui, etc., Panama).—SALVIN and GODMAN, Biol. Centr.-Am., Aves., ii, 1897, 561 (Volcan de Barba, Birris, La Palma de San José, etc., Costa Rica; Volcan de Chiriqui, etc. Panama).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 33 (Boquete, Chiriqui, Panama, 4,000 ft.).—RIDGWAY, Condor, vii, 1905, 158, in text (Coliblanco, Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., 1910, 266 (Guayabo and Coliblanco, Costa Rica; habits).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 576 (Costa Rica; habits, etc.).

[*Aulacorhamphus*] *cæruleigularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 110. *Aulacorhynchus cæruleogularis* CABANIS, Journ. für Orn., 1862, 330 (Costa Rica; crit.).

<sup>a</sup> Fresh colors of specimens shot by the author in Costa Rica.

<sup>b</sup> Eleven specimens (ten from Costa Rica).

<sup>c</sup> Ten specimens, from Costa Rica.

**AULACORHYNCHUS CÆRULEOGULARIS COGNATUS (Nelson).****GOLDMAN'S BLUE-THROATED TOUCANET.**

Similar to *A. c. cæruleogularis* but prenasal spot on maxilla deep black, instead of chestnut; pileum and hindneck averaging less olivaceous, and size averaging less, except feet.

*Adult male*.—Length (skins), 290–308 (300); wing, 118–121.5 (119.3); tail, 93–104 (98); culmen, 62.5–64.5 (63.5); tarsus, 34–36 (34.9); outer anterior toe, 23–25.5 (24.6).<sup>a</sup>

*Adult female*.—Length (skin), 290; wing, 121.5; tail, 99.5; culmen, 53.5; tarsus, 31.5; outer anterior toe, 24.5.<sup>b</sup>

Southeastern Panamá (Mt. Pirrí, 5,000–5,200 ft., near head of Rio Limón).

*Aulacorhamphus cæruleigularis cognatus* NELSON, Smithsonian. Misc. Coll., vol. 60, no. 3, (pub. 2143) Sept. 27, 1912, 4 (Mt. Pirri, head of Rio Limon, 5,000 ft. e. Panamá; coll. U. S. Nat. Mus.).

**Superfamily GALBULÆ.****JACAMARS AND PUFF-BIRDS.**

> *Syndactyli* ILLIGER, Prodrornus Orn., 1811, 207. (Includes *Galbula* only.)

= *Galbulæ* FUEBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567.

> *Galbulæ* SHARPE, Rev. Classif. Birds, 1891, 84; Hand-list, ii, 1900, 194. (Excludes *Bucconidæ*.)

= *Galbulidæ* GADOW, in Bronn's Thier-Reich, Vög., ii, 1893, 265, 301; Classif. Vertebr., 1898, 37.

= *Passerine Scansores* SEEBOHM, Classif. Birds, 1890, 6.

> *Buccones* SHARPE, Rev. Classif. Birds, 1891, 84; Hand-list, ii, 1900, 196. (Excludes *Galbulidæ*.)

Small to moderately large desmognathous scansorial (zygodactyle) Coraciiformes with two carotid arteries, nude oil-gland, non-oscine or suboscine wing-coverts, temporal fossæ only moderately deep, and ectepicondylod process of humerus absent.

Temporal fossæ only moderately deep; thoracic hæmapophyses with ventral lateral expansions; furcula U-shaped, with hypocleidum; humero-coracoid fossa weak; ectepicondylod process of humerus absent; two carotid arteries; cæca present; oil-gland nude; wing-coverts nonoscine or suboscine (no proximally overlapping middle coverts), and aftershaft absent or greatly reduced; basipterygoid processes absent; myological formula AX or AXY; spinal pterygia well-defined on neck, forked on lower (not on upper) back; adult downs absent; tongue long, tapering, and membranous.

**KEY TO THE FAMILIES OF GALBULÆ.**

- a. Vomer absent; planta tarsi smooth (nonscutellate); pectoral pterygia with a narrow lateral (clavicular) and an inner (postero-gular) branch; aftershaft present (but small); tip of maxilla not decurved, or else (*Jacamerops*) gonys carinate and plumage of upper parts brilliantly metallic; gonys ridged (carinate); wing-coverts sub-oscine; lateral rectrices rudimentary or sixth pair absent; plumage more or less metallic ..... **Galbulidæ (p. 360).**
- aa. Vomer present; planta tarsi scutellate; pectoral pterygia without lateral (clavicular) or inner (postero-gular) branches; aftershaft absent; tip of maxilla decurved (often uncinat); gonys rounded; wing-coverts non-oscine (picarian); lateral rectrices well-developed; plumage not at all metallic ..... **Bucconidæ (p. 370).**

<sup>a</sup> Five specimens.

<sup>b</sup> One specimen.

## Family GALBULIDÆ.

## THE JACAMARS.

= [*Zygodactyl*] *Aureoli* VIEILLOT, Analyse, 1816, 26.

= *Galbulidæ* BONAPARTE, Saggio distr. An. Vert., 1831, 41; Prodr. Syst. Orn., 1840, 18; Consp. Av., i, 1850, 152.—CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 347.—SCLATER, Cat. Am. Birds, 1862, 265.—CABANIS and HEINE, Mus. Hein, iv, heft 1, 1863, 213.—LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 16.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. 104.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 412, 414.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1326, 1567.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 505.—BEDDARD, Struct. and Classif. Birds, 1898, 213.—SHARPE, Hand-list, ii, 1900, 194.

= *Galbulinæ* BONAPARTE, Prodr. Syst. Orn., 1840, 18; Consp. Av., i, 1850, 152.—CABANIS and HEINE, Mus. Hein, iv, heft 1, 1863, 213.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1873, 76 (English translation, 1889, 148).—GADOW, Bronn's Thier-Reich, Vög. ii, 1891, 266, 301.—SHARPE, Hand-list, ii, 1900, 194.

= *Galbulæ* (not of Fuerbringer, 1888) SHARPE, Rev. Classif. Birds, 1891, 84; Hand-list, ii, 1900, 194.

> *Jacameropinæ* SCLATER, Mon. Jacamars and Puff-Birds, 1882, p. xx.

Small to medium-sized desmognathous Picarian Birds with long, straight, pointed bill, having both culmen and gonyes carinate, a small aftershaft to the contour feathers, vomer absent, and pectoral pterygia with a narrow lateral (clavicular) and an inner (gular) branch; plumage usually metallic (green, bronze, or purplish) on upper parts, sometimes across breast also.

The Galbulidæ differ from the Bucconidæ, their nearest allies, in the above-mentioned characters, agreeing with the latter family in their desmognathous palate, absence of basipterygoid processes, presence of cæca, two carotids, nude oil-gland, and many other anatomical features.

The Jacamars are peculiar to continental tropical America, ranging from southern Mexico to southern Brazil, but are poorly represented north of the Isthmus of Panama, where only two species, belonging to two genera, are known to occur. Only twenty-one species and six genera are recognized, most of which belong to the Valley of the Amazon. They are forest birds, dull or stupid in their nature though active enough in pursuit of their insect food, which they catch by darting swiftly from some dead twig upon which they have apparently been dozing. They lay two pure white eggs, which are deposited in holes in banks of streams or old stumps.

## KEY TO THE GENERA OF GALBULIDÆ.

- a. Bill obviously decurved, broad (width at nostrils equal to depth at same point); nostrils with internal membrane; lateral rectrices two-fifths as long as middle pair..... *Jacamerops* (p. 362).<sup>a</sup>
- aa. Bill straight, narrow, compressed (width at nostrils much less than depth at same point); nostrils without internal membrane; lateral rectrices less than one-fourth as long as middle pair, or else sixth pair wanting.



- b. Bill slender, its greatest depth less than one-fifth length of culmen, the latter not elevated nor arched basally; feathers of pileum normal, or if narrow, elongated and pointed (*Jacamaralcyon*), not stiff; tail much longer than culmen; feet weak; back, scapulars, and rump not chestnut.
- c. Rectrices twelve (the outer pair rudimentary or greatly reduced); tail strongly rounded to strongly graduated.
- d. Tail nearly twice as long as wing, the middle rectrices slender, attenuate terminally; tenth (outermost) primary much less than half as long as ninth; nostril broadly oval, in anterior portion of nasal fossa; under parts of body black.....*Urogalba* (extralimital).<sup>a</sup>
- dd. Tail much less than one and a half times as long as wing, the middle rectrices broader, not attenuate terminally; tenth (outermost) primary half as long as ninth or longer; nostril narrow, comma-shaped, or crescentic, in lower as well as anterior part of nasal fossa; under parts of body not black.
- e. Tail much graduated, the fifth (outer developed) pair of rectrices not more than two-thirds as long as middle pair, the latter longest; outer side of tarsus with less than upper half feathered; bill relatively narrower basally; orbital region feathered, except beneath eye; chest metallic green, golden, or purplish bronze, like back, etc.....*Galbula* (p. 365).
- ee. Tail slightly graduated, the fifth pair of rectrices five-sixths as long as middle pair, the three middle pairs of nearly equal length; outer side of tarsus with more than upper half feathered; bill relatively broader and deeper basally; orbital region wholly naked; chest cinnamon-rufous or rufous-tawny, like rest of under parts of body.
- Psilopornis* (extralimital).<sup>b</sup>
- cc. Rectrices ten (the sixth pair wanting); tail slightly rounded or subtruncate.
- d. Toes four; feathers of head normal.....*Brachygalba* (p. 369).
- dd. Toes three, the inner hind toe (hallux) wanting; feathers of head (except auricular region) narrow, elongated, and pointed.
- Jacamaralcyon* (extralimital).<sup>c</sup>
- bb. Bill stout, its greatest depth equal to nearly one-fourth length of exposed culmen, the latter elevated or arched basally; feathers of pileum narrow, pointed, stiff; tail shorter than culmen; feet stout; back, scapulars, and rump (whole of under parts also) chestnut.....*Galbalcyrrhynchus* (extralimital).<sup>d</sup>

<sup>a</sup> *Urogalba* Bonaparte, *Ateneo Italiano*, ii, 1854, 129 (Consp. Volucr. Zygod., 1854, 13.) (Type, *Alcedo paradisea* Linnæus.)—*Urocex* Cabanis and Heine, *Mus. Hein.*, iv, heft 1, April, 1863, 216. (To replace *Urogalba* Bonaparte, on grounds of purism.)—*Chalcophanes* (not of Wagler, 1827) Reichenbach, 1853, 196.

Amazon Valley and the Guianas. (Two species, or subspecies.)

<sup>b</sup> *Psilopornis* Ridgway, new genus. (Type, *Galbula albirostris* Latham.)

<sup>c</sup> *Jacamaralcyon* Lesson, *Traité d'Orn.*, 1831, 235. (Type, *J. brasiliensis* Lesson = *Galbula tridactyla* Vieillot.)—*Cauax* Cabanis, in Wiegmann's *Archiv für Naturg.*, i, 1847, 347. (To replace *Jacamaralcyon* Lesson, on grounds of purism.)

Southern Brazil. (Monotypic.)

<sup>d</sup> *Galbalcyrrhynchus* Des Murs, *Rev. Zool.*, viii, June, 1845, 207. (Type, *G. leucotis* Des Murs.)—*Galbalcyrrhynchus* (emendation) Gray, *Gen. Birds*, iii, 1849, App., 5.—*Galbalcyrrhynchus* (emendation) Sclater, *Cat. Am. Birds*, 1862, 268.—*Jacamaralcyonides* Des Murs, *Icon. Orn.*, 1849, 5, pl. 17. (Type, *Galbalcyrrhynchus leucotis* Des Murs.)—*Alcyonides* Reichenbach, *Handb. Spec. Orn.*, i, 1852, 83. (Type, *Galbalcyrrhynchus leucotis* Des Murs.)—*Cauccias* Cabanis, in *Ersch u. Grub. Enc.*, sect. 1, lii, 1851, 310. (To replace *Galbalcyrrhynchus* Des Murs, on grounds of purism.)

Upper Amazon Valley. (Monotypic?)

## Genus JACAMEROPS Oken.

*Jacamerops* <sup>a</sup> OKEN, Isis, i, 1817, 1148. (Type, *Les Jacamerops* Cuvier=*Alcedo grandis* Gmelin=*A. aurea* Müller.)

*Lamprotila* SWAINSON, Classif. Birds, ii, 1837, 336. (Type, *L. platyrhynchos* Swainson=*Alcedo aurea* Müller.)

*Lamproptila* (emendation) AGASSIZ, Nomencl. Zool., Aves (addenda), 1846, 12.  
—CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 227.

Large four-toed Galbulidæ (length about 260–297 mm.) with the bill broad and depressed for basal two-thirds or more and distinctly decurved.

Bill longer than head (culmen decidedly less than half as long as wing), distinctly (though not strongly) decurved, compressed terminally only, its width at nostrils equal to its depth at same point; culmen strongly ridged; gonys faintly concave, slightly prominent basally, distinctly ridged; mandibular rami concave, the lower edge strongly ridged; commissure slightly arched, the tomia smooth, not deflected basally. Nostrils exposed. A few slender, rather short, antrorse bristles projected forward over nostrils, the rictus, malar apex, and chin with similar but much smaller bristles; orbital region partly naked, especially a triangular space in front of eye. Wing moderate, rather pointed, the longest primaries decidedly longer than longest secondaries; seventh primary longest, the sixth and eighth slightly shorter and about equal, the ninth shorter than fifth, the tenth (outermost) a little more than half as long as ninth. Tail much longer than wing, graduated, the lateral (developed) pair of rectrices about three-fourths as long as middle pair, all the rectrices rather broad, not tapering terminally, the tip broadly rounded. Tarsus slightly longer than middle toe without claw, feathered for upper half or more.

*Coloration*.—Above brilliantly metallic golden green, the back more coppery (sometimes coppery red), the tail more bluish; under parts mostly plain tawny or rufous-tawny, the adult male with a patch of white on lower throat.

*Range*.—Costa Rica to Amazon Valley. (Monotypic.)

## JACAMEROPS AUREA (Müller).

## GREAT JACAMAR.

*Adult male*.—Forehead and crown bright metallic green (the former sometimes more bluish) passing into more golden green on nape, this into rich metallic golden or reddish bronze on back and scapulars (especially the interscapular region), the rump and upper tail-coverts bright golden green, sometimes tinged or intermixed with golden or reddish bronze; wing-coverts and secondaries bright metallic golden green; primaries black, the shorter (proximal) ones more or less tinged or washed with metallic green toward edge of outer webs, the primary coverts dark metallic green; middle pair of

<sup>a</sup> From *Jacamar*, a native name; + *ψ*, face (or *Jaca[mar]* + *merops*). (Richmond.)

rectrices bright metallic green or golden green (sometimes changing to blue or greenish blue in certain lights), the remaining rectrices dark metallic blue, or violet-blue, brightest on outer web, or with outer web metallic bluish green, green, or bronze-green; sides of head metallic green, sometimes tinged with bluish anteriorly; sides of neck bright golden green or golden bronze, like hindneck; chin and upper throat darker metallic green (more dusky on chin), sometimes tinged with golden or coppery posteriorly; lower throat pure-white, forming a more or less triangular transverse patch; rest of under parts plain clear tawny or rufous-tawny; bill black; length (skins), 275–297 (285); wing, 110.5–119.5 (114); tail, 126.5–140 (133.5); exposed culmen, 45–52.5 (48.5); width of bill at nostrils, 11.5–13.5 (12.5); tarsus, 13–14 (13.7); outer anterior toe, 14.5–16 (15.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but white throat-patch replaced by tawny or tawny-ochraceous, like rest of under parts, which are slightly paler than in adult male; length (skins), 260–295 (279); wing, 106–115 (110.9); tail, 118–136 (125.3); exposed culmen, 43.5–50 (46.5); width of bill at nostrils, 11–13 (11.8); tarsus, 13.5–14 (13.7); outer anterior toe, 14.5–16 (15.2).<sup>b</sup>

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Width of bill at nostrils.	Tarsus.	Outer anterior toe.
MALES.						
Three adult males from Costa Rica.....	113.5	137	48.7	12.3	13.8	15.2
Two adult males from western Panama (Veragua)....	115.5	135.5	48	11.7	13.2	15.2
One adult male from eastern Panama (Canal Zone)....	110.5	136.5	49.5	12	13.5	15.5
One adult male from northern Colombia (Rio Truando)	115	140	-----	12.5	13.5	15.5
One adult male from central Colombia (Bogota).....	119.5	132	52.5	12.5	-----	-----
Three adult males from British Guiana.....	112.5	131	47.3	12.8	14	15
Four adult males from Venezuela (La Union, Caura)...	114.1	129.9	48.1	13	13.7	15.2
FEMALES.						
Two adult females from Costa Rica.....	110	127.2	48	11.7	13.7	14.7
One adult female from western Panama (Veragua)....	106	118	45.5	11	13.5	15.5
Two adult females from eastern Panama (Canal Zone)..	109	125.2	45.5	11	13.7	15.5
One adult female from Venezuela (Suapuré).....	115	136	46.5	12.5	13.5	15
Three adult females from British Guiana (2) and Cay- enne (1).....	111.7	122.8	46.7	12.5	-----	-----
Two adult females from Amazon Valley (Brazil).....	113.2	126	45.7	12.2	14	15.5

In the series examined variations are noticeable which to a certain extent seem to be correlated with geographic area; but the series is too small to show whether the differences observed are sufficiently near being constant to warrant the recognition of subspecies. Of the six specimens from Cayenne and British Guiana five have the forehead conspicuously blue, even the crown strongly tinged with blue; of five specimens from Venezuela only two have the faintest tinge of blue on the forehead, the color in the other three being bronze-green or golden green; while in most examples from Panama and Costa Rica the color of the forehead is about intermediate. The bill averages decidedly broader basally in specimens from Venezuela and the Guianas than in those from Panama and Costa Rica.



*Young female*.—Similar to the adult female, but under parts paler and duller (dull tawny-ochraceous) and foreneck, as well as throat, mostly metallic green.

Caribbean slope of Costa Rica (Carrillo; El Hogár; Jiménez; Cuabre; Rio Sicsola, Talamanca) and southward through Panamá (Veragua; Canal Zone), Colombia (Rio Truando; Bogotá; Remédios, Antioquia), Venezuela (Suapure; La Union, Caura), British Guiana (Demerara; Essequibo River; Mazaruni River; Atapurau River; Bartica Grove; Camacusa; Merumé Mts.), and Cayenne to Brazil (Amazon River; Rio Purús; Rio Capím; Teffé; Rio Jurúa, Amazonas), eastern Ecuador (Rio Coca; Valle del Rio Santiago; Gualaquiza), and eastern Peru (Rio Javarri; Yurimaguas; Chamicuros; Santa Cruz).

*Alcedo aurea* MÜLLER, Syst. Nat. Suppl., 1776, 94 (Berbice, Dutch Guiana; based on *Long-tailed Kingfisher*, etc., Vosmaer, Besch. Missch. Am. Langst. Ys-Vogel).

*Jacamerops aurea* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 508.—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 104 (Suapure, Venezuela).—IHERING, Revista Mus. Paul., iv, 1904, 445 (Rio Jurúa, Brazil).—HELLMAYR, Novit. Zool., xiv, 1907, 84 (Teffé, Brazil; crit.).—SNETHLAGE, Journ. für Orn., 1908, 20 (Rio Purús, w. Brazil), 515 (Villa Braga, Tapajos, Brazil); Bol. Mus. Goeldi, v, 1908, 64 (Rio Purús).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 578 (Costa Rica; habits).

*Jacamerops aureus* BERLEPSCH, Novit. Zool., xv, 1908, 277 (Cayenne).

[*Alcedo*] *grandis* GMELIN, Syst. Nat., i, pt. i, 1788, 458 (based on *Great Jacamar* Latham, Gen. Synop. Birds, i, 605).

[*Galbula*] *grandis* LATHAM, Index Orn., i, 1790, 245.

*Galbula grandis* STEPHENS, Shaw's Gen. Zool., ix, pt. i, 1815, 227.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xvi, 1817, 443.—BONNATERRE and VIEILLOT, Enc. Méth., iii, 1823, 1325.—LESSON, Man. d'Orn., ii, 1828, 111.

*Jacamerops grandis* LESSON, Traité d'Orn., 1831, 234, pl. 27, fig. 2.—GRAY, List Fissirostr. Birds Brit. Mus., ii, pt. i, 1848, 68.—CASSIN, Cat. Halcyonidae Acad. Nat. Sci. Phila., 1852, 18; Proc. Ac. Nat. Sci. Phila., 1860, 134 (Rio Truando, Columbia).—SCLATER, Synopsis Galb., 1852, 9; Proc. Zool. Soc. Lond., 1855, 16; 1857, 263; 1858, 263 (Rio Javarri, e. Peru); Cat. Am. Birds, 1862, 268 (upper Rio Negro); Mon. Jacamars and Puff-Birds, ii, 1880, 57, pl. 18; Cat. Birds Brit. Mus., xix, 1891, 176 (Veragua, Panama, etc.); in Wytsman's Gen. Av., pt. 10, 1909, 7.—DESCOURTILZ, Orn. Brés., 1854-56, pl. 18, fig. 4, and text.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 298.—PELZELN, Sitz. Ak. Wien, xx, 1856, 519; Orn. Bras., 1870, 25, 405.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 291 (Panama).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Panama); 1867, 582 (Rio Capim and Barra, n. Brazil); 1873, 294 (Chamicuros and Santa Cruz, e. Peru); 1879, 536 (Remedios, Antioquia, Colombia).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1882, 44 (Yurimaguas, n. e. Peru); Orn. du Pérou, iii, 1886, 122.—SALVIN, Ibis, 1886, 62 (Bartica Grove, Camacusa, Merumé Mts., and Atapurau R., Brit. Guiana).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Jiménez, Costa Rica).—BERLEPSCH, Zeitschr. Orn., 1887, 185 (Bogotá, Colombia).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, no. 368, 19 (Valle del Rio Santiago and Gualaquiza, e. Ecuador).—GOODFELLOW, Ibis, 1902, 213 (Rio Coca, e. Ecuador, habits; crit.).—GOELDI, Ibis, 1903, 498 (Rio Capim, n. Brazil).

- J[acamerops] grandis* GRAY, Gen. Birds, i, 1847, 84.—REICHENBACH, Handb., i, 1852, 88, pl. 459, figs. 3282, 3283.
- [*Jacamerops*] *grandis* BONAPARTE, Consp. Av., i, 1850, 153; Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—GRAY, Hand-list, i, 1869, 102, no. 1248.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 105.
- Lamproptila grandis* CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 718; in Ersch. u. Grub. Enc., sec. 1, lii, 1851, 310.
- L[amproptila] grandis* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 227.
- [*Lamproptila*] *grandis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 211 (Peru; Guiana; Cayenne).
- Galbula jacamaciri* SHAW, Nat. Misc., xx, 1819, pl. 833 (based on *Le Jacamaciri* Audebert and Vieillot, Ois. Dor., i, Hist. Nat. Jacam., 1802, 8 pl. 6).
- Lamproptila platyrhyncha* SWAINSON, Classif. Birds, ii, 1837, 336.
- Galbula jacamerini* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 298.
- G[albula] magna* VOIGT, Thierreich, i, 1831, 678 (based on *Le grand Jacamar* Levaillant).
- (?) [*Jacamerops*] *boersii* BONAPARTE, Consp. Av., i, 1850, 153 (based on Levaillant, Hist. Nat. Jac., pl. 53).
- (?) *Jacamerops isidori* DEVILLE, Rev. Zool., 1849, 55 (Sarayacu and Pampa del Sacramento, e. Peru; coll. Paris Mus.).—SCLATER, Synop. Galb., 1852, 9; Proc. Zool. Soc. Lond., 1855, 16.—DES MURS, Exped. de Castelnau, Zool., Ois., 1855, pl. 10.—HARTLAUB, Journ. für Orn., 1857, 43.
- (?) [*Jacamerops*] *isidori* BONAPARTE, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 105.
- (?) [*Jacamerops*] *isidori* REICHENBACH, Handb. Spec. Orn., i, 1852, 88.
- (?) *Jacamerops isidorei* DES MURS, Exped. de Castelnau, Zool., Ois., 1855, 32 (Mission de Sarayacu, Rio Ucayali, and Pampa del Sacramento, e. Peru).
- (?) *L[amproptila] isidori* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 227 (Pebas, e. Peru).

### Genus GALBULA Brisson.

- Galbula* BRISSON, Orn., iv, 1760, 85. (Type, by tautonomy, *Alcedo galbula* Linnæus.)
- Auga*<sup>a</sup> BILLBERG, Synop. Faunæ Scand., i, part 2, 1828, tab. A. (New name for *Galbula* Brisson.)
- Caucalias*<sup>b</sup> CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 218. (Type, *Galbula leucogastra* Vieillot.)

Medium-sized to rather small four-toed Galbulidæ (length about 200–260 mm.) with the graduated tail longer than wing (but much less than twice as long), bill narrower than deep at nostrils, and with under parts of body not black.

Bill long, slender, and compressed, much longer than head (exposed culmen at least half as long as wing); culmen very faintly convex in middle portion, not at all decurved terminally, sharply ridged throughout; gonys three to four times as long as mandibular rami, straight to slightly concave, sharply ridged throughout, usually slightly prominent basally; commissure straight to very faintly

<sup>a</sup> *Αύγειω*, I shine, glitter. (Richmond.)

<sup>b</sup> "Namen wir von *καυκαλίας* (=καύηξι), entlehnten, gleichsam als Bindeglied zwischen den Gattungen *Urocex* und *Galbula* erscheinen." (Cabanis and Heine.)

arched, not deflected basally, the tomia smooth. Nostril longitudinal, overhung by a broad, convex operculum, overlaid by several long and stout antrorse bristles, the rictus, malar apex, and chin with similar but smaller bristles. Wing moderate, much rounded, the longest primaries exceeding secondaries by much less than length of tarsus; sixth and seventh primaries longest, the fifth and eighth slightly shorter, the ninth about equal to fourth, the tenth (outermost) half as long as ninth or a little longer. Tail decidedly longer than wing, graduated, the lateral (developed) rectrices a little more than half to two-thirds as long as middle pair; rectrices relatively rather narrow, the middle ones tapering terminally but not attenuate nor pointed, the tip more or less broadly rounded. Tarsus as long as or longer than outer anterior toe without claw, feathered for less than upper half.

*Coloration*.—Above brilliantly metallic green, golden, or purplish bronze, the head sometimes bluish; chest (sometimes throat or breast also) similar in color to back; under parts of body (posterior to chest) usually rufous-tawny, the lateral rectrices also tawny (at least in part); adult males usually with a triangular throat-patch of white, this buff or tawny in adult females.

*Range*.—Southeastern Mexico to eastern Peru, Bolivia, southern Brazil, Cayenne, Trinidad, and Tobago. (About nine species.)

#### **GALBULA MELANOGENIA Sclater.**

##### **BLACK-CHINNED JACAMAR.**

*Adult male*.—Above bright metallic golden green, usually more decidedly golden on back and rump, the pileum usually slightly darker; four middle rectrices purer (less golden) green, the inner web of second pair duller green; auricular region and greater part of malar region rather dark metallic green, passing into dark sooty or blackish on suborbital and loreal regions, anterior portion of malar region, and chin, the latter usually more or less intermixed medially with pale brown or whitish, sometimes in form of streaks; throat pure white, forming a conspicuous, more or less triangular, patch; chest bright metallic green, similar to but usually less golden than color of back, etc.; rest of under parts, together with four lateral rectrices (on each side) plain rufous-tawny, the later (especially the third and fourth, from outside) with basal portion of outer web metallic green; bill black; iris brown; bare orbital space yellow; legs and feet brownish in dried skins, yellow or greenish yellow in life; length (skins), 204–256 (232); wing, 80.5–90.5 (84.5); tail, 97–111.5 (102.2); exposed culmen, 40–57 (51.1); tarsus, 12–14 (13.1); outer anterior toe, 10.5–12 (11.1).<sup>a</sup>

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<sup>a</sup> Forty-six specimens.



*Adult female*.—Similar to the adult male but gular area tawny-buff instead of white, and fourth rectrix (from outer side) usually with outer web edged for part of its length with metallic green or bronze-green; length (skins), 205–238 (224); wing, 79–87 (83.1); tail, 90–100 (96.8); exposed culmen, 40.5–55.5 (48.9); outer anterior toe, 10.5–12.5 (11.3).<sup>a</sup>

*Young male*.—Similar in coloration to the adult male, but chin mostly white medially.

Southeastern Mexico in States of Vera Cruz (Buena Vista; Tolosa; Playa Vicente) and Chiapas (Palenque) and southward through Guatemala (Telemán; sources of Rio de la Pasión; Choctúm; Chiséc; Cobán; Las Salinas; Los Amates, Ysabál), British Honduras (Belize; Toledo District), Honduras (Omoa; San Pedro; Chaloma; Julián; Rio Blanco; Rio Segóvia; Céiba; Yaruca), Nicaragua (Chontales; Rio Escondido; Los Sábalos; Matagalpa; Uluce; La Libertad; Lavala; Pena Blanca), Costa Rica (Bebedero; Angostura; San Carlos; Turrialba; La Palma de Nicoya; Las Trojas; Jiménez; San Mateo; El Pozo de Terraba; Pozo del Rio Grande; El General; Pozo Azul de Pirris; Palmár; Lagarto; Boruca; Buenos Aires; Guayabo; Bonilla; Guápiles; Carrillo; Guácimo; Cuabre; Pacuare; El Hogár; Talamanca; Juan Viñas; Bolsón), Panamá (Divala; David, Boquerón, Bugaba, Mina de Chorchá, and Volcán de Chiriquí, Chiriquí), and Colombia (Rio Nercua) to western

<sup>a</sup> Thirty-four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Three adult males from Vera Cruz.....	86.3	106.7	52.2	12.8	11.3
Three adult males from Chiapas.....	86.5	106.2	55.2	13.3	11.5
Eight adult males from Guatemala.....	85.3	105.9	53.9	12.7	11.6
Seven adult males from Honduras.....	85.4	104.3	53.8	12.8	11.4
Five adult males from Nicaragua.....	84.5	102.2	51.1	13.1	11.1
Ten adult males from Costa Rica.....	83.7	99	48.9	12.9	11
Ten adult males from western Panama.....	84.6	101.8	52.2	12.5	11.2
FEMALES.					
Four adult females from Vera Cruz.....	86.2	101.5	50.1	12.7	11.6
Two adult females from Chiapas.....	85.2	100.7	48.5	12.2	11.2
Three adult females from Guatemala.....	81.7	94.7	49.7	12.2	10.8
One adult female from British Honduras.....	83	100.5	53	12.5	11.5
One adult female from Honduras.....	88	100.5	48	.....	.....
Three adult females from Nicaragua.....	83.3	97.8	45.5	12.8	11.3
Ten adult females from Costa Rica.....	82	95.2	47.6	12.7	11.6
Ten adult females from western Panama.....	82.1	94.9	50.1	12.4	11.2

I am not able to detect any color differences between specimens from different geographic areas. Specimens from western Ecuador have not been seen by me.

Ecuador <sup>a</sup> (Balzár Mts.; Chimbo; Cachaví; Foreste del Rio Peripa; Santo Domingo).

- Galbula melanogenia* SCLATER, Jardine's Contr. Orn., 1852, 61, pl. 90 (no locality given), 93 (Veragua, w. Panamá); Synop. Galb., 1852, 3; Proc. Zool. Soc. Lond., 1855, 13, 16; 1856, 139 (David, w. Panamá); 1858, 357 (Omoa, Honduras), 387 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 266 (Central America); Mon. Jacam. and Puff-Birds, 1879, 19, pl. 5; Cat. Birds Brit. Mus., xix, 1891, 166 (Belize, Brit. Honduras; Telemán, sources of Rio de la Pasión, Choctum, and Chisec, Guatemala; San Pedro, Honduras; Chontales, Nicaragua; Bebedero and Angostura, Costa Rica; Bugaba, etc., w. Panamá; Balzar Mts., w. Ecuador); in Wytsman's Gen. Av., pt. 10, 1909, 4.—CASSIN, Cat. Halcyon. Ac. Nat. Sci. Phila., 1852, 17.—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (bet. Omoa and Comayagua, Honduras; habits).—SCLATER and SALVIN, Ibis, 1859, 131 (Caribbean coast distr. and Omoa, Honduras); 1870, 837 (San Pedro, Honduras).—SALVIN and SCLATER, Ibis, 1860, 40 (Cobán, Guatemala).—TAYLOR, Ibis, 1860, 116 (near Caribbean coast, Honduras; habits).—SALVIN, Proc. Zool. Soc. Lond., 1867, 151 (David, Chiriquí, w. Panamá); 1870, 201 (Mina de Chorchá, Bugaba, and Volcan de Chiriquí, w. Panamá); Ibis, 1872, 321 (Chontales, Nicaragua).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 118 ("Payna," San Carlos, and Turrialba, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—BOUCARD, Liste Ois. récol. Guat., 1878, 24; Proc. Zool. Soc. Lond., 1878, 47 (San Carlos, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 401 (La Palma de Nicoya, w. Costa Rica); vi, 1884, 407 (Los Sábalos, Nicaragua).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 572 (Chimbo, w. Ecuador).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 68 (Chimbo).—BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 123.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Las Trojas, Jiménez, San Mateo, Pozo Azul de Pirris, and Pacuare, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 591 (Rio Segovia, Honduras).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 512 (Rio Escondido, Nicaragua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 48 (Palmar, Lagarto, Boruca, and Buenos Aires, s. w. Costa Rica).—HARTERT, Novit. Zool., v, 1893, 498 (Cachaví, n. w. Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 506.—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Chaloma, Honduras).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, no. 368, 19 (Foreste del Rio Peripa, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 32 (Bogaba, w. Panamá); Bull. Mus. Comp. Zool., xxxix, 1903, 145 (Ceiba and Yaruca, Honduras).—GOODFELLOW, Ibis, 1902, 212 (Santo Domingo, w. Ecuador).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 91 (Los Amates, Ysabal, e. Guatemala; habits).—MENEGAUX, Bull. Soc. Philom., 1908, 5 (Chimbo, Balzar, Cachaví, and Foreste del Rio Peripa, w. Ecuador).—FERRY, Pub. 146, Field Mus. N. H., 1910, 265 (Guayabo, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 577 (Costa Rica; habits).
- [*Galbula*] *melanogenia* SCLATER, Proc. Zool. Soc. Lond., 1855, 13.—GRAY, Handlist, i, 1869, 102, no. 1237.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.
- "C" [*Galbula*] *melanogenia* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 221.
- Galbula ruficauda* (not of Cuvier) CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 134 (Rio Nercua, n. Colombia).

<sup>a</sup> Not having seen any specimens from western Ecuador I am unable to say whether they are identical with Central American examples.

## Genus BRACHYGALBA Bonaparte.

*Brachygalba* BONAPARTE, Ateneo Italiano, ii, 1854, 129 (Consp. Volucr. Zygod., 1854, 13). (Type, *B. albiventris* Bonaparte=*Galbula lugubris* Swainson.)

*Brachigalba* (emendation) BONAPARTE, Ateneo Italiano, ii, 1854, 382 (p. 16 of reprint). (Says *B. albigularis* is type.)

*Brachygalbula* (emendation) SCLATER, Cat. Am. Birds, 1862, 267 (in synonymy of *Brachygalba albigularis*).

*Brachyceæ* <sup>a</sup> CABANIS and HEINE, Mus. Hein., iv, heft 1, April, 1863, 214 (to replace *Brachygalba* Bonaparte, on grounds of purism).

Small Galbulidæ (length about 138–183 mm.) with only ten rectrices (the sixth pair wanting), tail subtruncate, toes four, and feathering of head normal.

Bill about twice as long as head, straight, compressed (except at base), attenuate terminally, the culmen and gonys both sharply ridged. Nostril exposed, obliquely horizontal, in lower anterior portion of nasal fossa, overhung by a very broad operculum. Rictal and frontal bristles well developed. Wing moderately long, with longest primaries exceeding distal secondaries by about half the length of bill; sixth and seventh primaries longest (the fifth and eighth but little shorter), the tenth (outermost) less than one-third as long as the longest, the ninth a little longer than distal secondaries. Tail shorter than distance from bend of wing to tip of proximal secondaries but longer than distance from bend to tip of distal secondaries, subtruncate or slightly rounded; rectrices ten, the sixth pair wanting. Tarsus about one-fourth as long as distance from nostril to tip of maxilla, unfeathered, except extreme upper part in front, the acrotarsium transversely scutellate; toes four, the outer anterior one (without claw) slightly but decidedly longer than tarsus, the inner posterior one very small.

*Plumage and coloration*.—Lores naked; plumage of head normal. Coloration dull, the wings and tail (sometimes chest and sides also) slightly metallic.

*Range*.—Eastern Panamá to Bolivia and central Brazil. (Six species.)

## BRACHYGALBA SALMONI Sclater and Salvin.

## SALMON'S JACAMAR.

*Adults (sexes alike)*.—Pileum, hindneck, back, and scapulars plain dusky grayish brown (dark fuscous) glossed with bronze-greenish (less distinctly in worn plumage); rest of upper parts dull metallic bronze-green or bluish bronze-green; auricular, suborbital, and malar regions sooty blackish or fuscous-black; chin and throat pale buff or

<sup>a</sup> "Von *βραχύς* (kurz, klein) und *κήξ* (= *κήϋξ* = *καβάξ*) zu verändern vorschlagen." (Cabanis and Heine.)



buffy white, forming a conspicuous area which extends farther back laterally (to end of auricular region) than medially; foreneck, chest, sides of breast, and sides plain dull metallic bluish bronze-green; median portion of breast, whole abdomen, hinder flanks, anal region, and shorter under tail-coverts plain cinnamon; longer under tail-coverts dull bronze-greenish, sometimes narrowly margined with cinnamon; under wing-coverts mostly dark grayish brown or fuscous, faintly glossed with bronze-greenish; under surface of remiges slate-dusky with basal portion abruptly dull white on primaries, pale cinnamon or cinnamon-buff on secondaries; bill, legs, and feet black.

*Immature*.—Similar to adults, but feathers of darker colored parts more or less distinctly margined terminally with pale cinnamon or dull buffy.

*Adult male*.—Length (skins), 168.5–179.5 (174); wing, 71.5–72 (71.7); tail, 53.5–57 (55.2); exposed culmen, 36–48 (42); tarsus, 10–11.5 (10.7); outer anterior toe, 10.<sup>a</sup>

*Adult female*.—Length (skin), 175.5; wing, 71; tail, 56.5; exposed culmen, 46.5; tarsus, 10.5; outer anterior toe, 10.<sup>b</sup>

Eastern Panamá (Cana, Darién), southward to central Colombia (Rio Nichi, Antioquia).

*Brachygalba salmoni* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 535 (Rio Nichi, Antioquia, Colombia; coll. Salvin and Godman).—SCLATER, Mon. Jacam. and Puff-Birds, 1882, p. [43], pl. 13; Cat. Birds Brit. Mus., xix, 1891, 173.

## Family BUCCONIDÆ.

### THE PUFF BIRDS.

<*Bucconidæ* BOIE, Isis, 1826, 976 (includes *Capitonidæ* and *Trogonidæ*).

=*Bucconidæ* SCLATER, Cat. Am. Birds, 1862, 268.—CABANIS and HEINE, Mus. Heine, iv heft 1, 1863, 123.—LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 16.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. vi, 105.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 412, in text.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1325.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 510.—SHARPE, Hand-list, ii, 1900, 196.

=*Bucconinæ* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 124.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1873, 76 (English translation, 1889, 149).—GADOW, Bronn's Thier-Reich, Vög., ii, 1873, 266, 301.

=*Capitonidæ* BONAPARTE, Prodr. Syst. Orn., 1840, 18; Consp. Av., i, Feb., 1850, 146.

=*Capitoninæ* BONAPARTE, Prodr. Syst. Orn., 1840, 18; Consp. Av., i, Feb., 1850, 146.

=*Buccones* SHARPE, Rev. Classif. Birds, 1891, 84; Hand-list, ii, 1900, 196.

=*Tamatix* FITZINGER, Sitzungsberichte K. Akad. Wiss. Wien (Math.-nat. Cl.), xxi, 1856, 298.

Small to medium-sized desmognathous Picarian Birds with very full, lax, dull-colored plumage; pointed and anteriorly compressed bill, with tip more or less strongly decurved, and both culmen and gonys

<sup>a</sup> Two specimens, from Cana, e. Panamá.

<sup>b</sup> One specimen, from Cana.

rounded; contour feathers without aftershafts; vomer present, and the pectoral pteryla without lateral (clavicular) or inner (gular) branches.

The above-mentioned structural characters will serve to readily separate the Bucconidæ from the Galbulidæ, the two groups being more closely related than is either to any other.

Like the Galbulidæ and Ramphastidæ, the Bucconidæ are peculiar to continental tropical America, reaching their northern limit in southern Mexico and their southern in Paraguay and southern Brazil. More than forty species are recognized by Dr. Sclater in the British Museum "Catalogue" (vol. xix), these belonging to seven genera, of which two are monotypic. As is usually the case with peculiarly Neotropical families, a large majority of the species and genera are restricted to the Amazon Valley and Colombia, only one species occurring in southern Mexico and but one more until Nicaragua is reached, where three are found, the total number of species being increased on the Isthmus of Panama to seven.

The Puff Birds inhabit wooded localities, where they are most often to be seen perched silently upon some prominent twig, from which at intervals they dart upon the passing insects which constitute their food. Little is known regarding their nidification, but the few species whose nesting habits have been observed nest in holes in banks, like the Kingfishers, Jacamars, and allied birds, and like these lay glossy pure white eggs.

#### KEY TO THE GENERA OF BUCCONIDÆ.

- a. Bill stouter, straighter, with tip of maxilla more abruptly decurved, distinctly uncinatè, sometimes cleft medially, the gonys more or less convex, ascending terminally. (*Bucconinæ*.)
- b. Bill thick, its width at nostrils nearly to quite equal to its depth at same point.
- c. Tarsus shorter than outer anterior toe without claw; upper part mostly plain blackish, the forehead sometimes white.....*Northarchus* (p. 373).
- cc. Tarsus equal to or longer than outer anterior toe without claw; upper parts mostly brown or rufous-tawny, the forehead never white.
- d. Bill relatively longer, its width at rictus much less than length of gonys; bristly antrorse feathers round base of bill more strongly developed; side of head tri-colored (black, white, and chestnut or tawny); general color of upper parts brown (sometimes sparsely barred with paler), the tail uniform brown; under parts of body barred or spotted.
- e. Tail strongly graduated, the lateral rectrices only three-fifths as long as middle pair; wing more rounded, the longest primaries very slightly exceeding secondaries; bill more depressed, its depth at nostril equal to less than half the distance from nostril to tip of maxilla.

*Argicus* (extralimital).<sup>a</sup>

<sup>a</sup> *Cyphos* (not *Cyphus* Schönherr, 1823) sive *Tamatia* (not of Cuvier, 1817) Spix, Av. Bras., i, 1824, 51. (Type, *C. macrodactylus* Spix.)—*Cyphus* (emendation; not of Schönherr, 1823) Agassiz, Nom. Zool. Index Univ., 1846, 113.—*Argicus* Cabanis and Heine, Mus. Hein., iv, heft 1, Jan. 15, 1863, 146, footnote, 148. (Type, *Cyphos macrodactylus* Spix.)

Colombia to upper Amazon valley. (Monotypic?)

- ee. Tail moderately rounded, the lateral rectrices three-fourths as long as middle pair; wing more pointed, the longest primaries decidedly longer than secondaries; bill less depressed, its depth at nostrils equal to decidedly more than half the distance from nostril to tip of maxilla, the gonys more convex, more strongly ascending terminally.

**Nystactes (extralimal).<sup>a</sup>**

- dd. Bill relatively shorter, its width at rictus equal to length of gonys; bristly antrorse feathers round base of bill less strongly developed; side of head unicolored (tawny); general color of upper parts tawny, narrowly barred, including tail, with black; under parts of body neither barred nor spotted.

**Bucco (extralimal).<sup>b</sup>**

- bb. Bill compressed, its width at nostrils much less than its depth at same point.

- c. Tip of maxilla strongly bifid (cleft medially); bristly antrorse feathers round base of bill longer; longest primaries decidedly longer than secondaries; general color of upper parts grayish brown, indistinctly spotted with grayish white; a black pectoral band (sometimes a jugular band also); tail plain grayish brown; bill wholly black. . . . . **Hypnelus** (p. 380).

- cc. Tip of maxilla not distinctly if at all bifid; bristly antrorse feathers round base of bill shorter; longest primaries only slightly longer than secondaries; upper parts distinctly spotted with brown, tawny, or buffy on dusky ground; tail barred; bill red, orange, or horn color.

- d. Bill shorter, the culmen from base much less than half as long as wing, less compressed, its width at nostrils equal to about one-third the length of exposed culmen. . . . . **Ecchaunornis** (p. 384).

- dd. Bill longer, the culmen (from base) nearly half as long as wing, more compressed, its width at nostrils equal to about one-fourth the length of exposed culmen. . . . . **Nystalus** (extralimal).<sup>c</sup>

- aa. Bill weaker, more gradually decurved terminally, with tip of maxilla not uncinat, the gonys more or less decurved terminally. (*Malacoptilinæ*.)

- b. Tenth (outermost) primary at least half as long as ninth, the fifth to seventh longest; tail much more than half as long as wing; bill decurved only terminally.

- c. Feathers of anterior portion of malar region elongated and pointed, forming a conspicuous tuft on each side of chin; tail more strongly rounded or graduated, the lateral rectrices not more than three-fourths as long as middle pair (usually much less); coloration varied (usually more or less streaked or spotted).

- d. Tail relatively longer, less strongly graduated, unicolored; under parts not white, striped with black . . . . . **Malacoptila** (p. 387).

<sup>a</sup> *Nystactes* Gloger, in Froriep's Notizen, xvi, 1827, 277. (Type, *Bucco tamatia* Gmelin.)—*Nyctactes* (emendation) Gray, List Gen. Birds, 1840, 10.—*Chaunornis* Gray. List Gen. Birds, 1841, 13. (Type, *Bucco tamatia* Gmelin.)

Amazon Valley to Guiana. (Two species?)

<sup>b</sup> *Bucco* Brisson, Orn., iv, 1760, 92. (Type, *Bucco capensis* Linnæus=*B. collaris* Latham.) (See Newton, Ibis, 1876, 94-104.)—*Eutamatia* Fitzinger, Sitz. k. Akad. Wiss. Wien (Math.-nat. Classe), xxi, heft 2, 1856, 298. (Type, *Bucco capensis* Linnæus.)

Amazon Valley to Guiana. (Monotypic.)

<sup>c</sup> *Nystalus* Cabanis and Heine, Mus. Hein., iv, heft 1, Jan. 15, 1863, 139. (Type, *Alcedo maculata* Gmelin.) ("Von νύσταλος (= νυστάκης, schläfrig) entnehmen, sind." (Cabanis and Heine.)

Brazil to Bolivia and Paraguay. (Two species.)



- dd. Tail relatively shorter, more strongly graduated, bicolored (with a black subterminal band); under parts white, striped with black.

*Micromonacha* (extralimital).<sup>a</sup>

- cc. Feathers of malar region not elongated; tail less strongly rounded, the lateral rectrices decidedly more than three-fourths as long as middle pair; coloration plain (neither streaked nor spotted).

- d. Bill stouter, less compressed, its width at nostrils equal to nearly half the distance from nostril to tip of maxilla, black; antrorse bristles around base of bill much larger, covering more than basal half of bill; above olive, beneath tawny, the throat white ..... *Hapaloptila* (extralimital).<sup>b</sup>

- dd. Bill more slender, more compressed, its width at nostrils much less than half the distance from nostril to tip of maxilla, red, orange, or yellow; bristles around base of bill smaller, covering much less than basal half of bill; above not olive and beneath not tawny, or else (*Nonnula*) throat not white.

- e. Tail nearly as long as wing; bill not strongly decurved from middle; upper tail-coverts not white.

- f. Bill stouter, its depth at nostrils equal to nearly half the distance from nostril to tip of maxilla, the length of exposed culmen very much less than one-third the length of wing; tail rounded, the difference between middle and lateral rectrices less than one-sixth its length, the rectrices relatively much broader; coloration black or black and grayish, sometimes with white on wing-coverts or fore part of head, the bill red, orange, or yellow; very large (length more than 225 mm.).

*Monasa* (p. 392).

- ff. Bill more slender, its depth at nostrils equal to much less than half the distance from nostril to tip of maxilla, the length of exposed culmen equal to much more than one-third the length of wing; tail graduated for nearly one-third its length, the rectrices relatively much narrower; coloration plain brown or olive above, tawny-ochraceous or fulvous beneath, the under tail-coverts usually white; very small (length less than 150 mm.)..... *Nonnula* (p. 399).

- ee. Tail only about half as long as wing; bill strongly decurved for terminal half or more; upper tail-coverts (lower also) white.

*Chelidoptera* (extralimital).<sup>c</sup>

### Genus NOTHARCHUS Cabanis and Heine.

*Notharchus* <sup>d</sup> CABANIS and HEINE, Mus. Hein., iv, heft 1, Jan. 15, 1863, 146 (footnote), 149. (Type, *Tamatia hyperrhynchus* Bonaparte.)

<sup>a</sup> *Micromonacha* Sclater, Proc. Zool. Soc. Lond., Oct., 1881, 777. (Type, *Bucco lanceolatus* Deville.)

Upper Amazon Valley. (Monotypic.)

I have not seen this form, and therefore can not give its generic characters with greater exactness.

<sup>b</sup> *Hapaloptila* Sclater, Proc. Zool. Soc. Lond., 1881, 777. (Type, *Malacoptila castanea* Verreaux.)

Colombia to Ecuador. (Monotypic.)

<sup>c</sup> *Chelidoptera* Gould, Proc. Zool. Soc. Lond., 1836, 81. (Type, *Cuculus tenebrosus* Pallas.)—*Brachypetes* Swainson, Classif. Birds, ii, 1837, 334, fig. 290c. (Type, *Cuculus tenebrosus* Pallas.)

Guiana and Venezuela to southeastern Brazil. (Two species.)

<sup>d</sup> "νόθηξ (träge) und άρχος (Herrscher)." (Cabanis and Heine.)

*Megacephalus* <sup>a</sup> (not of Fitzinger, 1843) BERTONI, Aves Nuevas del Paraguay, 1901, 39. (Type, *M. bitorquatus* Bertoni=*Bucco swainsoni* Gray.)

*Tamatia* (not of Cuvier, 1817, nor Spix, 1824) BONAPARTE, Ateneo Italiano, ii, 1854, 128 (Consp. Vol. Zygod., 1854, 13).—LESSON, Traité d'Orn., 1831, 166. (Type, *T. melanoleucus* Lesson=*Bucco tectus* Boddaert.)

*Nothriscus* <sup>b</sup> CABANIS and HEINE, Mus. Hein., iv, heft 1, Jan. 15, 1863, 146. (Type, *Bucco tectus* Boddaert.)

Large to small Bucconidæ (length about 140-250 mm.) with bill stout and thick (its width at nostrils greater than its depth at same point), tarsus shorter than outer toe without claw, the upper parts mostly plain blackish, usually with a white band across hindneck.

Bill very strong but variable in relative size, with tip of maxilla abruptly decurved, the tip of the more or less conspicuous unguis more or less distinctly bifid or cleft medially; depth of bill at nostrils nearly to quite equal to its width at same point; exposed culmen much longer than combined length of tarsus and first phalanx of middle toe, sometimes exceeding combined length of tarsus and entire middle toe without claw, nearly straight for more than basal half, then strongly decurved (the tip of maxilla more or less strongly uncinate), rounded or indistinctly ridged; gonys one and a half times as long as mandibular rami, or more, distinctly though not strongly convex, ascending terminally, very broad and rounded basally, narrowly rounded or indistinctly ridged terminally; maxillary tomium sometimes nearly straight, sometimes distinctly sinuated, never notched subterminally. Nostril very small, roundish, opening postero-laterally, in anterior end of the very broad but short nasal fossa, concealed by the antrorse prefrontal plumes, the latter only moderately large (reaching not more than halfway to tip of maxilla) but extremely stiff. Rictal bristles strongly developed, extremely stiff; antrorse bristles of malar apex much smaller and weaker; feathers of chin with long, slender, recurved bristly tips. Wing moderate or rather short, strongly rounded, the longest primaries exceeding distal secondaries usually by more than length of middle toe with claw; fifth to eighth, sixth and seventh, or sixth to eighth primaries longest, the ninth equal to or longer than fourth, the tenth (outermost) slightly less to slightly more than half as long as the longest. Tail a little more than three-fourths to more than four-fifths as long as wing, more or less strongly rounded, the rectrices rather narrow, with rounded tip. Tarsus shorter than outer anterior toe without claw.

*Plumage and coloration.*—Plumage compact but soft, mostly blended; orbital region completely feathered or (sometimes) with a bare space immediately before and behind eye. Upper parts mostly plain blackish, usually with a white collar across hindneck, often with

<sup>a</sup> Μέγας, large; κεφαλή, head. (Bertoni.)

<sup>b</sup> "Diminutiv-Form von νωθρός (träge)." (Cabanis and Heine.)

forehead white; under parts white, crossed by a pectoral or jugular band of black, sometimes with the parts posterior to the latter brown, tawny, or ochraceous; bill wholly black.

*Range*.—Southern Mexico to eastern Ecuador, southeastern Brazil, and Cayenne. (About ten species.)

KEY TO THE SPECIES AND SUBSPECIES OF NOTHARCHUS.

a. Larger (wing more than 95 mm.); a white collar across hindneck; tail without white spots.

b. Forehead (more or less broadly) white; chest white, like throat; malar and sub-orbital regions white.

c. Abdomen and under tail-coverts entirely immaculate white; black pectoral band not contracted medially, immediately succeeded by pure white.

d. Forehead broadly white, the white involving superciliary region. (*Notharchus hyperrhynchus*.)

e. Bill larger (exposed culmen 47 mm.). (Amazon Valley.)

*Notharchus hyperrhynchus hyperrhynchus* (extralimital).<sup>a</sup>

ee. Bill smaller (exposed culmen, in adult male, 37–47, averaging 41.9 mm.). (Southeastern Mexico to western Ecuador.)

*Notharchus hyperrhynchus dysoni* (p. 376).

dd. Forehead narrowly white, the superciliary region black. (British Guiana to Lower Amazon Valley.)...*Notharchus macrorhynchus* (extralimital).<sup>b</sup>

bb. Forehead black; chest black (like breast); malar and suborbital regions black. (Eastern Panama to central Colombia.).....*Notharchus pectoralis* (p. 379).

cc. Abdomen and under tail-coverts not immaculate white; black pectoral band contracted medially, immediately succeeded by brown or ochraceous.

<sup>a</sup> *Bucco hyperrhynchus* Sclater, Proc. Zool. Soc. Lond., 1855, 193, pl. 105 (Upper Amazons; coll. Paris Mus.; ex *T[amatia] hyperrhynchus* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13), (= *nomen nudum*); Mon. Jacamars and Puff-birds, 1882, 71, pl. 22; Cat. Birds Brit. Mus., xix, 1891, 183.—*Bucco dysoni hyperrhynchus* Snethlage, Journ. für Orn., Jan., 1908, 20 (Rio Purús, w. Brazil).—*N[otharchus] hyperrhynchus* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 150.—*Bucco (Capito) giganteus* Pelzeln, Sitz. Ak. Wien, Math. Natur. Class, xx, 1856, 498, 511 (Marabitanas, Brazil).—*Bucco giganteus* Pelzeln, Orn. Bras., I Abth., 1868, 20.

I have seen only two specimens of this form; one from Pará, the other erroneously ascribed to Trinidad. So far as these two examples are concerned, the only difference from *N. dysoni* that I can discover consists in the slightly larger general dimensions and relatively larger bill, and there can be no question that they represent merely a slightly differentiated form of the same species.

<sup>b</sup> [*Bucco*] *macrorhynchus* Gmelin, Syst. Nat., i, pt. i, 1788, 406 (Cayenne; based on *Le plus grand Barbu à gros bec de Cayenne* Buffon, Pl. Enl., pl. 689; etc.).—*Bucco macrorhynchus* Temminck, Cat. Syst., 1807, 55; Goffin, Mus., Pays-Bas, i, Buccones, 1863, 76.—*Bucco macrorhynchus* Sclater, Proc. Zool. Soc. Lond., 1854, 110; 1855, 106; Mon. Jacamars and Puff-birds, 1882, 65, pl. 20; Cat. Birds Brit. Mus., xix, 1891, 181.—*C[apito] macrorhynchus* Wagler, Syst. Av., 1827, Capito, sp. 2.—*Tamatia macrorhynchus* Lesson, Traité d'Orn., 1831, 167.—*C[yphos] macrorhynchus* Strickland, Ann. and Mag. N. H., vi, 1841, 418.—*N[otharchus] macrorhynchus* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 151.—*C[yphos] macrorhynchus* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 150, foot-note, in text.



- d. Lower breast, abdomen, and under tail-coverts immaculate ochraceous or ochraceous-buff. (Southeastern Brazil.)

**Notharchus swainsoni** (extralimital).<sup>a</sup>

- dd. Lower breast brown; abdomen and under tail-coverts white broadly barred or squamated with brown or blackish. (Upper Amazons; Venezuela?; Cayenne?).....

- Notharchus ordii** (extralimital).<sup>b</sup>  
aa. Smaller (wing less than 76 mm.); no white collar on hindneck; tail spotted with white. (*Notharchus tectus*.)

- b. Black jugular band averaging broader; pileum more extensively and distinctly spotted with white; averaging larger (wing 71-75, tail 52.5-57, exposed culmen 22-25). (British Guiana and Cayenne to Lower Amazon Valley.)

**Notharchus tectus tectus** (extralimital).<sup>c</sup>

- bb. Black jugular band averaging narrower; pileum less extensively and distinctly spotted with white (the spots usually confined to forehead, and there sometimes indistinct); averaging smaller (wing 66.5-73.5, tail 50-60.5, exposed culmen 20.5-22). (Western Ecuador to Panama.)

**Notharchus tectus subtectus** (p. 379).

### NOTHARCHUS HYPERRHYNCHUS DYSONI (Sclater).

#### DYSON'S PUFF-BIRD.

*Adults (sexes alike).*—Forehead, superciliary region, suborbital, auricular, and malar regions, chin, throat, foreneck, and upper chest, and collar across hindneck white, the auricular, suborbital, and malar regions more or less intermixed with dark gray or blackish (in form of broad but indistinct transverse bars); lores, crown, occiput, and nape plain, slightly glossy, black or slate-black; rest of upper

<sup>a</sup> *B[ucco] swainsoni* Gray and Mitchell, Gen. Birds, i, Dec., 1846, 74 (based on *Tamatia macrorhynchus* Swainson, Zool. Illustr., pl. 99).—*Bucco swainsoni* Sclater, Ann. N. H., ser. 2, xiii, 1854, 358; Proc. Zool. Soc. Lond., 1855, 196; Mon. Jacamars and Puffbirds, 1882, 73, pl. 23; Cat. Birds Brit. Mus., xix, 1891, 183.—[*Capito*] *swainsoni* Bonaparte, Consp. Av., i, 1850, 146.—[*Tamatia*] *swainsoni* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—*N[otharchus] swainsoni* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 151.

<sup>b</sup> *Bucco ordii* Cassin, Proc. Ac. Nat. Sci. Phila., v, 1851, 154, pl. 8 ("Venezuela"; coll. Ac. Nat. Sci. Phila.).—*Bucco ordi* Sclater, Proc. Zool. Soc. Lond., 1855, 196; Mon. Jacamars and Puff-birds, 1882, 77, pl. 25; Cat. Birds Brit. Mus., xix, 1891, 184.—[*Tamatia*] *ordi* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—*N[otharchus] ordi* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 152.

I have not seen this well-marked species.

<sup>c</sup> *Bucco tectus* Boddaert, Tabl. Pl. Enl., 1783, 43 (Cayenne; based on *Barbu à plastron noir* Buffon, Hist. Nat. Ois., xiii, 155; Pl. Enl., 688, fig. 2); Sclater, Mon. Jacamars and Puff-birds, 1882, 79, pl. 26; Cat. Birds Brit. Mus., xix, 1891, 185.—[*Bucco*] *melanoleucos* Gmelin, Syst. Nat., i, pt. i, 1788, 406 (Cayenne; based on *Le plus petit Barbu à poitrine noire de Cayenne*, Buffon, Pl. Enl., 688, fig. 2; etc.).—*Bucco melanoleucos* Temminck, Cat. Syst., 1807, 55; Vieillot, Nouv. Dict. d'Hist. Nat., iii, 1816, 241.—*Tamatia melanoleucus* Lesson, Traité d'Orn., 1831, 167.—[*Capito*] *melanoleucus* Wagler, Syst. Av., 1827, *Capito*, sp. 2.—*N[otharchus] tectus* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 146 (Pará).

Another subspecies, *Notharchus tectus picatus* (*Bucco picatus* Sclater, Proc. Zool. Soc. Lond., 1855, 194; Mon. Jacamars and Puff-birds, 1882, 81; Cat. Birds Brit. Mus., xix, 1891, 186; *N[otharchus] picatus* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 146), from the Upper Amazons, I have not seen. It is said to differ in larger size, the black color more intense, and the six middle rectrices devoid of white spots.

parts slightly glossy blackish slate, darker (nearly black) on upper back, lighter (more slaty) on tail, the more posterior scapulars and interscapulars, wing-coverts, secondaries, feathers of rump, upper tail-coverts, and rectrices more or less distinctly margined terminally with white, these white margins broadest on upper tail-coverts; a very broad band across breast and lower chest black, sometimes (in younger birds?) slightly broken by narrow terminal margins of whitish to some of the feathers; sides and flanks blackish slate or slate-black, more or less broadly barred with white; rest of under parts white; under wing coverts black, with a more or less extensive median area or stripe of white, those along carpo-metacarpal edge white; basal portion of inner webs of remiges white (this involving proximal half or more of the secondaries), the remaining portion plain slate color; bill black; iris dark purplish, red, or wine purple; legs and feet dark gray or grayish black.

*Adult male*.—Length (skins), 220–249 (234); wing, 110.5–120.5 (115.9); tail, 78.5–92 (84.4); exposed culmen, 37–45.5 (41.9); depth of bill at nostril, 16–19 (18); tarsus, 18–21 (19.7); outer anterior toe, 20.5–25 (23.1).<sup>a</sup>

*Adult female*.—Length (skins), 225–256 (243); wing, 112–119.5 (116.6); tail, 78–92.5 (87.7); exposed culmen, 36–47 (43); depth of bill at nostrils, 17–19 (18); tarsus, 18.5–21 (19.7); outer anterior toe, 22–25 (22.9).<sup>b</sup>

Locality.	<i>a</i> Seventeen specimens.						<i>b</i> Eighteen specimens.					
	Wing.	Tail.	Ex- posed culmen.	Depth of bill at nostrils.	Tarsus.	Outer anterior toe.	Wing.	Tail.	Ex- posed culmen.	Depth of bill at nostrils.	Tarsus.	Outer anterior toe.
MALES.												
One adult male from e. Guatemala (Gualan).....	116	87.5	40.5	17.5	18.5	22.5						
One adult male from British Honduras.....	120	87.5	42	18	19	24						
One adult male from Honduras (Santa Ana).....	115.5	88.5	43.5	18	20.5	23						
Four adult males from e. Costa Rica.....	113.5	83.9	41.4	17.2	19	22.9						
Two adult males from w. Costa Rica.....	118.7	90	45.2	18.7	20.5	24.2						
Two adult males from w. Nicaragua.....	117.7	80.7	41.7	18.5	20	24						
One adult male from w. Panama (Divala).....	118.5	83.5	47	19	20	24						
Four adult males from e. Panama (Canal Zone).....	114.5	81.2	39.1	17.7	19.9	22						
One adult male from Venezuela (El Pilar).....	114	85	42.5	18.5	20	23						
FEMALES.												
One adult female from Oaxaca.....	117.5	90.5	44	18	18.5	22						
One adult female from Chiapas (San Benito).....	118	89	45.5	19	21	24						
One adult female from British Honduras.....	119	93	45.5	18.5	19	23						
Two adult females from Honduras (Santa Ana).....	118.2	89.5	45.5	18	20	23						
Three adult females from e. Costa Rica.....	115.9	89.2	42.1	17.4	19.1	22.5						
Four adult females from w. Nicaragua.....	116.6	86	43.4	18.4	20.1	23						
Two adult females from w. Costa Rica.....	117.5	88	40.5	17.7	20.5	24.5						
Three adult females from e. Panama (Canal Zone).....	114.2	83.5	41	18	19.3	22.3						
SEX UNDETERMINED.												
One adult from w. Ecuador (Guayaquil).....	117	84	42.5	18	19.5	21						
One adult from Amazon Valley, Brazil.....	118	85	42.5	18	19.5	23.5						

There is considerable variation in the width of the black pectoral band, relative amount of blackish and white on sides and flanks, and also in width of the white frontal area; but these variations seem to have no relation to geographic area.

Southeastern Mexico, in States of Oaxaca (Santa Efigénia; Tapaná-tepec) and Chiapas (San Benito), and southward through Guatemala (Escuintla; Vera Paz; Cobán; Naranjo; Rio Chocán; Gualán), British Honduras (Cayo; Toledo District), Honduras (Santa Ana), Nicaragua (Chontales; Chinandega; Volcán de Chinandega; León; Rio Escondido), Costa Rica (Nicoya; La Palma de Nicoya; Pigres; Pozo Azul de Pirris; Paso Real; San Gerónimo; Guácimo; El Hogár; Pacuare), Panama (Divala; Bugaba; Mina de Chorchá; Chepo; Loma del León), and Colombia (Bogotá), to Ecuador (Guayaquil, Babahoyo, Balzár Mountains, and Vices on Pacific slope; Rio Napo and Sarayacu on Atlantic slope) and Venezuela (El Pilár).

[*Capito*] *macrorhynchus* (not *Bucco macrorhynchus* Gmelin) TSCHUDI, Fauna Peruana, Aves, 1845-46, 259.

*Bucco macrorhynchus* SCLATER, Proc. Zool. Soc. Lond., 1854, 110.

[*Tamatia*] *gigas* BONAPARTE, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).

*Bucco dysoni* SCLATER, Proc. Zool. Soc. Lond., 1855 (pub. Jan. 22, 1856), 193 (Honduras; coll. Brit. Mus.); Cat. Am. Birds, 1862, 269 (Central America); Mon. Jac. and Puff-Birds, 1882, 67, pl. 21; Cat. Birds Brit. Mus., xix, 1891, 182 (Cayo, Brit. Honduras; Escuintla and Vera Paz, Guatemala); Chontales, Nicaragua; Mina de Chorchá, Bugaba, Chepo, and Lion Hill, Panama; Bogota Colombia; Rio Napo, Sarayacu, Babahoyo and Balzar Mts., Ecuador; Upper Amazons).—SALVIN and SCLATER, Ibis, 1860, 40 (Coban, Guatemala; Honduras).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 318 (Lion Hill, Panama); Bull. U. S. Nat. Mus., no. 4, 1876, 30 (Santa Efigenia, Oaxaca).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1870, 201 (Bugaba and Mina de Chorchá, Panama); Ibis, 1872, 322 (Chontales, Nicaragua).—NUTTING, Proc. U. S. Nat. Mus., v, 1883, 401 (La Palma de Nicoya, Costa Rica).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 118 (Babahoyo, w. Ecuador).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Pacuare and Pozo Azul de Pirris, Costa Rica).—SUMICHRIST, La Naturaleza, v, 1882, 239 (Santa Efigenia and Tapanatepec, Oaxaca).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 513 (Rio Escondido, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 511.—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Naranjo and Rio Chocan Guatemala).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, no. 368, 20 (Vices, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 17 (Loma del Leon, Panama).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 578 (Costa Rica; habits).

[*Bucco*] *dysoni* GRAY, Hand-list, i, 1869, 86, no. 1015.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 105.—SHARPE, Hand-list, ii, 1900, 197.

*N[otharchus] dysoni* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 149.

*Notharchus dysoni* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 207.

*Bucco leucocrissus* SCLATER, Proc. Zool. Soc. Lond., 1860, 284 (Babahoyo, w. Ecuador; coll. P. L. Sclater); Cat. Am. Birds, 1862, 269.

*N[otharchus] leucocrissus* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 151.

*Bucco napensis* SCLATER, Cat. Am. Birds, 1862, 269 (Rio Napo, e. Ecuador; coll. P. L. Sclater).

*N[otharchus] napensis* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 152.

*Bucco macrorhynchus napensis* RIDGWAY, Proc. U. S. Nat. Mus., iv, Nov. 25, 1881, 193.



**NOTHARCHUS PECTORALIS (Gray).****BLACK-BREASTED PUFF-BIRD.**

*Adults (sexes alike).*—Pileum, nape, upper back, anterior scapulars, foreneck, chest, and breast, plain glossy greenish blue-black, passing into "dead" black on anterior portion of malar region, suborbital region, and lores; auricular region white, and from the posterior extremity of this white area a collar of white across hindneck, the feathers of which are narrowly tipped with black; chin and throat white, with a strongly convex or semicircular, sharply defined, posterior outline; lower back, rump, upper tail-coverts, tail, and wings slate-black or blackish slate, the feathers narrowly margined terminally with whitish, except primaries and primary coverts; abdomen, lower breast, anterior portion of sides, and under tail-coverts, white; flanks and posterior part of sides dull slate color or slate-gray, the feathers with a broad terminal margin of white and a narrower, indistinct subterminal bar of darker slaty; bill black; legs and feet dusky grayish or grayish black (in dried skins).

*Adult male.*—Length (skin), 206; wing, 97; tail, 80; exposed culmen, 31; tarsus, 17; outer anterior toe, 18.5.<sup>a</sup>

*Adult female.*—Length (skins), 205–207 (206); wing, 97–99 (98); exposed culmen, 32.5–33 (32.7); tarsus, 16.5; outer anterior toe, 19.<sup>b</sup>

Eastern Panamá (Lion Hill; Chepo) to central Colombia (Magdalena Valley; Nichi, Antioquia; Bucaramanga).

*Bucco pectoralis* GRAY, Gen. Birds, i, Dec., 1846, [74], pl. 26; List Fissirostr. Birds Brit. Mus., 1848, 47.—SCLATER, Ann. and Mag. N. H., ser. 2, xiii, 1854, 358 (monogr.); Synop. Bucconidæ, 1854, 8; Proc. Zool. Soc. Lond., 1855, 196; Mon. Jacam. and Puff-birds, 1882, 75, pl. 24; Cat. Birds Brit. Mus., xix, 1891, 184 (Lion Hill and Chepo, Panamá; Magdalena Valley and Antioquia, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 464 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill); 1879, 536 (Nichi, Antioquia, Colombia).—WYATT, Ibis, 1871, 374 (Magdalena Valley, Colombia).—BERLEPSCH, Journ. für Orn., 1884, 277, 315 (Bucaramanga, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 513.

[*Bucco*] *pectoralis* GRAY, Hand-list, i, 1869, 85, no. 1011.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 105.—SHARPE, Hand-list, ii, 1900, 197.

[*Capito*] *pectoralis* BONAPARTE, Consp. Av., i, 1850, 146.

[*Tamatia*] *pectoralis* BONAPARTE, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).

N[*otharchus*] *pectoralis* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 152.

**NOTHARCHUS TECTUS SUBTECTUS (Sclater).****PANAMÁ PIED PUFF-BIRD.**

Similar to *N. tectus tectus*<sup>c</sup> but averaging slightly smaller; black jugular band narrower, and white spotting of pileum usually confined to forehead, and there sometimes indistinct.

<sup>a</sup> One specimen.<sup>b</sup> Two specimens.<sup>c</sup> See page 376.

*Adults (sexes alike).*—General color of upper parts deep black, passing into dull grayish black or dull sooty grayish on lower rump; forehead (sometimes part of crown also) with more or less numerous small spots or guttate streaks of white; a narrow superciliary stripe of white and posterior scapulars partly white, forming a conspicuous spot on each side of lower back; upper tail-coverts narrowly margined terminally with white, sometimes with indistinct concealed bars or spots of the same; inner webs of rectrices (except middle pair) with a terminal white spot and another (more quadrate in form) across middle portion, the outer web of each usually grayish at tip, the outermost (on each side) with a white space corresponding to that on inner web, the next usually with a more or less distinct grayish one; lower half of loreal region, suborbital region, and auricular region black; malar region and under parts white, the chest crossed by a broad, sharply defined, band of deep black, the sides and flanks more or less barred, spotted, or clouded with dull black or slate-black; bill, legs, and feet black.

*Adult male.*—Length (skins), 136–151 (146); wing, 66.5–70.5 (68.2); tail, 50–58.5 (55.1); exposed culmen, 20.5–22 (21.4); tarsus, 13–13.5 (13.2); outer anterior toe, 13.5–14.5 (14).<sup>a</sup>

*Adult female.*—Length (skins), 136–152 (147); wing, 68.5–73.5 (71.1); tail, 54–60.5 (56.7); exposed culmen, 20.5–22 (21.6); tarsus, 13–14 (13.4); outer anterior toe, 14–15 (14.2).<sup>b</sup>

Panamá (Panamá; Lion Hill; Gatún; Rio Índio) through Colombia (lower Rio Magdalena; Nichi, Antioquia) to western Ecuador (Esmeraldas).

*Bucco subtectus* SCLATER, Proc. Zool. Soc. Lond., 1860, 296 (Esmeraldas, w. Ecuador; coll. P. L. Sclater); Cat. Am. Birds, 1862, 270; Mon. Jacam. and Puff-Birds, 1882, 83, pl. 27; Cat. Birds Brit. Mus., xix, 1891, 186 (Esmeraldas; Nichi, Antioquia, Colombia; Lion Hill, Panama, and Veragua, Panama).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill; crit.); 1879, 536 (Nichi, Antioquia).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 118, 123 (Esmeraldas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 513.

[*Bucco*] *subtectus* GRAY, Hand-list, i, 1869, 86, no. 1021.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 106.—SHARPE, Hand-list, ii, 1900, 197.

*N[othriscus] subtectus* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 147 (coast of Ecuador).

*Bucco tectus* (not of Boddaert) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 318 (Lion Hill, Panama).

### Genus HYPNELUS Cabanis and Heine.

*Hypnelus*<sup>c</sup> CABANIS and HEINE, Mus. Hein., iv, heft 1, Jan. 10, 1863, 143. (Type, *Tamatia bicincta* Gould.)

<sup>a</sup> Six specimens.

<sup>b</sup> Six specimens from Panama (Canal Zone).

<sup>c</sup> "Von *δπνλάρος*=*δπνάλεος* (schläfrig)." (Cabanis and Heine.)

Medium-sized *Bucconidæ* (length about 187–205 mm.) with bill as long as or longer than head and much compressed, tarsus as long as outer anterior toe without claw, tip of maxilla distinctly bifid or cleft, bristles round base of bill very strong, tail nearly as long as wing, longest primaries decidedly longer than longest secondaries, upper parts grayish brown, indistinctly blotched with dull whitish, tail plain grayish brown, and under parts buffy with a pectoral band (sometimes a jugular band also) of blackish, the throat sometimes dull tawny.

Bill as long as or longer than head, distinctly compressed (its depth at nostrils decidedly greater than its width at same point); exposed culmen decidedly shorter than combined length of tarsus and outer anterior toe, without claw, straight for more than basal half, then first gradually then rather strongly decurved terminally, rounded or indistinctly ridged; tip of maxilla conspicuously bifid, or incised medially; gonys nearly to quite twice as long as mandibular rami, gently but distinctly convex, ascending terminally, rather prominent basally, rounded; maxillary tomium nearly straight, sometimes with basal third (more or less) slightly deflected. Nostril small, roundish, opening postero-laterally, in anterior end of the very short and broad nasal fossa, covered by antrorse prefrontal bristles, these extending over less than basal half of maxilla, slender, but exceedingly rigid. Rictal bristles very strong, extremely rigid; malar apex with much smaller antrorse bristles, the feathers of chin with long, slender, recurved bristly points. Wing moderate, the longest primaries exceeding distal secondaries by about length of tarsus; seventh and eighth, or fifth, sixth, and seventh, primaries longest, the ninth shorter than fifth (sometimes shorter than fourth), the tenth (outermost) slightly less to slightly more than half as long as the longest. Tail nearly as long as wing (seven-eighths as long, or more), strongly rounded, the lateral rectrices about four-fifths as long as middle pair, the rectrices rather narrow, with tip rounded. Tarsus equal to or slightly longer than outer anterior toe without claw.

*Plumage and coloration.*—Plumage soft, that of under parts blended, that of upper parts with feathers distinctly outlined but with margins more or less broken (the webs semidecomposed); orbital region feathered. Above grayish brown, blotched with dull whitish, the tail plain; under parts buffy with a pectoral band (sometimes a jugular band also) of blackish, the throat white or dull tawny.

*Range.*—Eastern Panamá to Colombia and Venezuela. (Two species.)



KEY TO THE SPECIES AND SUBSPECIES OF HYPNELUS.

- a. Under parts with two broad dark bands, one across foreneck, the other across upper breast; throat buff or buffy white. (Venezuela, including Margarita Island.)
- Hypnelus bicinctus* (extralimital).<sup>a</sup>**
- aa. Under parts with only one broad dark band, a black one across upper breast; throat cinnamon or russet to nearly chestnut, bordered posteriorly by a band of buffy white across chest. (*Hypnelus ruficollis*.)
- b. Paler; under parts of body cream-buff to nearly buffy white; throat cinnamon to cinnamon-buff, followed by a much broader jugular band of buffy white; black pectoral band narrower; pale spots on scapulars, etc., much larger. (Northern Colombia.)..... ***Hypnelus ruficollis ruficollis* (p. 382).**
- bb. Darker; under parts of body deep buff; throat (much more extensively) chestnut-cinnamon, followed by a very narrow band of buffy white; black pectoral band broader; pale spots on scapulars, etc., much smaller. (Venezuela.)..... ***Hypnelus ruficollis coloratus* (extralimital).<sup>b</sup>**

**HYPNELUS RUFICOLLIS RUFICOLLIS** (Wagler).

RUSSET-THROATED PUFF-BIRD.

*Adults (sexes alike).*.—Pileum, hindneck, and upper back deep broccoli brown, some of the feathers with indistinctly paler tips, the anterior portion of the forehead suffused with cinnamon or cinnamon-buff; a whitish or pale buffy collar across hindneck; lower back, scapulars, and wing-coverts deep broccoli brown, each feather with a large terminal guttate or ovate area of very pale brownish gray; rump and upper tail-coverts deep broccoli brown, the feathers rather broadly tipped with buff; remiges and rectrices grayish brown (nearly hair brown) narrowly margined with dull whitish, the inner secondaries paler and more grayish, at least terminally; lores dull white or buffy, passing into more decided buff or cinnamon-buff on anterior portion of forehead; suborbital and auricular regions dull white; a broad malar stripe and sides of neck deep broccoli brown (the former darker); anterior portion of malar region and whole of throat cinnamon, deeper or more saturated (nearly russet) centrally, fading into cinnamon-buff anteriorly and posteriorly, the upper chest clear buffy white, succeeded by a rather broad band of black across lower chest or upper breast; rest of under parts light buff, cream-buff, or

<sup>a</sup> *Tamatia bicincta* Gould, Proc. Zool. Soc. Lond., 1836, 80 ("Cayenne?").—*B[ucco] bicinctus* Gray, Gen. Birds, i, Dec., 1846, 74.—*Bucco bicinctus* Selater, Proc. Zool. Soc. Lond., 1855, 196; Mon. Jacamars and Puff-birds, 1882, 91, pl. 30; Cat. Birds Brit. Mus., xix, 1891, 188.—[*Capito*] *bicincta* Bonaparte, Consp. Av., i, 1850, 146.—[*Chau-nornis*] *bicincta* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—*H[yppnelus] bicinctus* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 143 (Puerto Cabello, Venezuela).—*Tamatia bitorquata* Swainson, Anim. in Menag., Jan. 1, 1838, 327 ("Trinidad").

A specimen of this species from Margarita Island, Venezuela, is so much paler than one from Valencia, on the mainland, that subspecific difference is strongly indicated.

<sup>b</sup> New subspecies. (Type from Encontrados, Venezuela; coll. Field Mus. Nat. Hist.)

pinkish buff, the sides and flanks more or less spotted with black; bill black; iris pale brown;<sup>a</sup> legs and feet dusky (in dried skins).

*Adult male*.—Length (skins), 187–205 (196); wing, 83.5–88 (86.6); tail, 75–79.5 (78.1); exposed culmen, 31–33 (32.6); tarsus, 18–20 (19.2); outer anterior toe, 17–20 (18.4).<sup>b</sup>

*Adult female*.—Length (skins), 200–216 (208); wing, 87–93 (88.9); tail, 79–86 (81.2); exposed culmen, 32–37 (33.9); tarsus, 18.5–21 (19.7); outer anterior toe, 17.5–20 (18.4).<sup>c</sup>

*Young*.—Similar to adults but pale gray spots on scapulars, etc., smaller and less distinct (in younger specimens the feathers with a narrow terminal margin of buff and a dusky subterminal bar), edgings of remiges and rectrices buff, and jugular band brownish black with narrow terminal margins of buff (sometimes broken into a transverse series of spots).

Northern and central Colombia (Rio Truando; Sabanilla, Cartagena; Barranquilla; Santa Marta; Bonda; Valle Dupár; Ocaña; Canuto; lower Rio Magdalena; vicinity of Bogotá).

*[Capito] ruficollis* WAGLER, Isis, 1829, 658 ("Mexico"; coll. Berlin Mus.).

*[Capito] ruficollis* BONAPARTE, Consp. Av., i, 1850, 146.

*B[ucco] ruficollis* GRAY, Genera Birds, i, 1846, 74.

*Bucco ruficollis* SCLATER, Ann. and Mag. N. H., ser. 2, xiii, 1854, 360 (monogr.); Synopsis Bucconidæ, 1854, 10, pl. 1; Proc. Zool. Soc. Lond., 1855, 196 (Colombia); Cat. Am. Birds, 1862, 270 (Santa Marta); Mon. Jacam. and Puff-Birds, 1882, 89, pl. 29; Cat. Birds Brit. Mus., xix, 1891, 187 (Santa Marta, Sabanilla, Ocaña, and Valle Dupár, Colombia).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 134 (Rio Truando, Colombia).—WYATT, Ibis, 1871, 374 (Canuto, Magdalena Valley, Colombia).—SALVIN and GODMAN, Ibis, 1879, 205 (Valle Dupár, Santa Marta, Colombia); 1880, 175 (Sierra Nevada de Santa Marta); Biol. Centr.-Am., Aves, ii, 1896, 514.—BERLEPSCH, Journ. für Orn., 1884, 318 (Bucaramanga, Colombia).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 133 (Santa Marta).—STONE, Proc. Ac. Nat. Sci. Phila., 1899, 305 (vicinity of Bogotá, Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 135 (Santa Marta and Bonda, S. M., Colombia; xxi, 1905, 280 (descr. eggs).

*[Bucco] ruficollis* GRAY, Hand-list, i, 1869, 86, no. 1023.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 106.—SHARPE, Hand-list, ii, 1900, 197.

*[Chaunornis] ruficollis* BONAPARTE, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).

*H[ypnelus] ruficollis* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 144 (Cartagena and Barranquilla, Colombia).

*Tamatia gularis* D'ORBIGNY and LAFRESNAYE, Rev. Zool., Aug., 1833, 166 (Cartagena, Colombia).

*[Capito] gularis* BONAPARTE, Consp. Av., i, 1850, 146.

<sup>a</sup> Salvin and Godman, Ibis, 1879, 205.    <sup>b</sup> Eight specimens.    <sup>c</sup> Ten specimens.

Genus *ECCHAUNORNIS* Ridgway.

*Ecchaunornis* <sup>a</sup> RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 97. (Type, *Bucco radiatus* Sclater.)

Medium-sized *Buconidae* (length about 190–215 mm.) with the compressed bill about as long as head or slightly shorter, the culmen straight to near tip where abruptly decurved, gonys distinctly convex and strongly ascending terminally, the tip of maxilla not distinctly if at all bifid; longest primaries only slightly exceeding secondaries, the upper parts, including tail, rufescent brown or rufous-tawny barred with black (or the tail narrowly barred with whitish), a collar across hindneck and the under parts buffy, the latter narrowly barred, more or less, with black; bill reddish or horn color.

Bill about as long as head or slightly shorter (culmen from base much less than half as long as wing), compressed, its depth at anterior end of nostrils equal to one and one-fourth to one and one-third times its width at same point; exposed culmen about one-third as long as wing, straight for most of its length, decurved terminally, indistinctly ridged; tip of maxilla slightly and obtusely uncinat, not bifid or incised (in *E. chacuru* the unguis more produced and pointed); gonys much longer than mandibular rami, distinctly convex, strongly ascending terminally, narrowly rounded or indistinctly ridged terminally, broadly rounded or slightly flattened basally; maxillary tomium nearly straight, sometimes faintly convex. Nostril small, oval, obliquely vertical, opening laterally, in anterior end of nasal fossa, partly concealed by the antrorse, decurved, very rigid prefrontal bristles. Wing short and rounded, the longest primaries very slightly exceeding longest secondaries; fifth, sixth, and seventh primaries longest, the ninth about equal to third (*E. fulvidus*, *E. radiatus*) or equal to fourth (*E. chacuru*), the tenth (outermost) nearly to quite half as long as the longest. Tail about six-sevenths as long as wing, strongly rounded (lateral rectrices about six-sevenths as long as middle pair), the rectrices narrow, rounded at tip. Tarsus about as long as middle toe, without claw.

*Plumage and coloration*.—Feathers of upper surface broad, distinctly outlined, those of under parts more blended; tail-coverts relatively very short, the upper covering slightly more than basal third of tail. Above, including tail, warm brown or rufous-tawny, barred or spotted with black (or the tail narrowly barred with pale brown or whitish), the hindneck crossed by a broad collar of buffy; under parts buffy (more or less deep) more or less barred with blackish; bill reddish, horn color, or grayish.

*Range*.—Panamá to western Ecuador, Bolivia, and Paraguay. (Three species.)

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<sup>a</sup> *Εκχαυνοῶ*, I puff up; *ὄρνις*, a bird.



## KEY TO THE SPECIES AND SUBSPECIES OF ECCHAUNORNIS.

- a. Sides of head buff, narrowly barred with black; remiges and rectrices cinnamon-rufous or rufous-tawny, barred with black. (*Ecchaunornis radiatus*.)
- b. Paler, the general color of under parts and sides of head and neck buffy white. (Central Colombia.).....*Ecchaunornis radiatus radiatus* (extralimital).<sup>a</sup>
- bb. Darker, the general color of under parts and sides of head and neck deep buff or ochraceous-buff. (Eastern Panama to western Ecuador.)
- Ecchaunornis radiatus fulvidus* (p. 385).**
- aa. Sides of head black, relieved by white on lores, auricular region, and anterior part of malar region; remiges brownish gray, slightly varied with whitish, the rectrices grayish brown narrowly barred with whitish. (Southeastern Brazil to Paraguay and Bolivia.) .....*Ecchaunornis chacuru* (extralimital).<sup>b</sup>

**ECCHAUNORNIS RADIATUS FULVIDUS (Salvin and Godman).****FULVOUS PUFF-BIRD.**

Similar to *E. r. radiatus*<sup>c</sup> but more deeply colored, deep buff or ochraceous-buff, replacing pale buff or buffy white.

*Adults (sexes alike).*—Forehead and crown broadly barred with black and russet, the former sometimes with the paler bars more buffy on anterior portion; occiput black spotted or barred with russet, each feather being tipped with the latter color; nape mostly uniform black; a broad collar of deep buff across hindneck; upper back black, usually more or less spotted or barred with russet; lower back, scapulars, wing-coverts, remiges, rump, upper tail-coverts, and tail light cinnamon-rufous or rufous-tawny, barred with black, the outer and longer primaries uniform brownish black or dusky distally; sides of head and neck buff, narrowly barred (except on loreal and superciliary regions) with black; chin dull white; rest of under parts buff, narrowly and rather distantly barred with black, except on abdomen, anal region, and under tail-coverts, the bars widest on chest; under

<sup>a</sup> *Bucco radiatus* Scater, Proc. Zool. Soc. Lond., 1853, 122, pl. 50 (Colombia; coll. Brit. Mus.); Mon. Jacam. and Puff-Birds, 1882, 109, part, pl. 36 (rear figure); Cat. Birds Brit. Mus., xix, 1891, 192, part (Bogota, Colombia).—*N[ystalus] radiatus* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 141.—*[Capito] ruficervix* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—*Ecchaunornis radiatus* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 97, in text.

<sup>b</sup> *Bucco chacuru* Vieillot, Nouv. Dict. d'Hist. Nat., iii, 1816, 239 (Paraguay; based on *El Chacuru* Azara, Apunt. Parag., ii, 330); Scater, Mon. Jacam. and Puff-Birds, 1881, 103, pl. 34; Cat. Birds Brit. Mus., xix, 1891, 191.—*Capito chacuru* Strickland, Ann. N. H., vi, 1841, 418; Hartlaub, Index Azara's Apunt., 1847, 17.—*[Tamatia] chacuru* Bonaparte, Consp. Av., i, 1850, 146.—*[Nyctastes] chacuru* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—*N[ystalus] chacuru* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 141.—*Capito melanotis* Temminck, Pl. Col., livr. 16, Nov., 1821, pl. 94 and text (Brazil; Paraguay; coll. Paris Mus.).—*Tamatia melanotis* Lesson, Traité d'Orn., 1831, 167.—*B[ucco] strigilatus* Lichtenstein, Verz. Doubl., 1823, 8 (Sao Paulo, s. Brazil).—*T[amatia] leucotis* Swainson, Orn. Drawings, pt. 1, 1834, pl. 10 (no locality).—*B[ucco] leucotis* Gray, Gen. Birds, i, 1846, 74.

<sup>c</sup> See foot note a.

wing-coverts and inner webs of remiges (except terminal portion of outer and longer primaries) ochraceous-buff; maxilla horn color, the mandible paler, except terminally; iris yellow;<sup>a</sup> legs and feet horn color (in dried skins).

*Adult male*.—Length (skins), 202–207 (205); wing, 88–93.5 (91.2); tail, 73.5–77 (75.7); exposed culmen, 29.5–34 (31); tarsus, 17.5–20 (18.8); outer anterior toe, 17–19 (18)<sup>b</sup>.

*Adult female*.—Length (skins), 204–219 (209); wing, 89.5–94 (92.2); tail, 77.5–79.5 (78.6); exposed culmen, 30.5–34.5 (32.9); tarsus, 19.5–20.5 (19.7); outer anterior toe, 17.5–19 (18.3)<sup>c</sup>.

Specimens from Guayaquil are identical with those from Panama in coloration; but the two from Honda, Tolima, are both paler, one of them conspicuously so, and should probably be referred to *E. radiatus radiatus*. It will be observed that these are also decidedly smaller than the others. I have not been able to examine a specimen of undoubted *E. radiatus radiatus*, however.

Panamá (Veragua; Cana, Darién; Lion Hill; Cascajal, Coclé) and southward through northern and western Colombia (Remédios and Nichi, Antioquia; near Honda, Tolima) to western Ecuador (Guayaquil; Chimbo).

*Bucco radiatus* (not of Sclater, 1853) SCLATER, Mon. Jacam. and Puff-Birds, 1882, 109, part, pl. 36, front (larger) fig.; Cat. Birds Brit. Mus., xix, 1891, 192, part (Veragua).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 536 (Remédios and Nichi, Antioquia, Colombia).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 572 (Chimbo, n. w. Ecuador; crit.).

[*Bucco*] *radiatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 106, part.

*Bucco fulvidus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 65, March, 1896, 514 (Veragua, Panama; coll. Salvin and Godman).

[*Bucco*] *fulvidus* SHARPE, Hand-list, ii, 1900, 198.

*Ecchaunornis radiatus fulvidus* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 97, in text.

<sup>a</sup> Heyde and Lux, manuscript.

<sup>b</sup> Three specimens from Panama.

<sup>c</sup> Six specimens from Panama.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Three adult males from eastern Panama.....	91.2	75.7	28	18.8	18
One adult male from Colombia (near Honda, Tolima).....	86	76	28	17	19
FEMALES.					
Six adult females from Panama.....	92.2	78.6	32.9	19.7	18.3
One adult female from Colombia (near Honda, Tolima).....	83.5	66.5	29.5	17.5	16.5
SEX NOT DETERMINED.					
Two adults from western Ecuador (Guayaquil).....	92.7	79.5	33	18.7	19

## Genus MALACOPTILA Gray.

*Malacoptila* GRAY, List Gen. Birds, 1841, 13. (Type, *Bucco fuscus* Gmelin.)

Medium-sized or rather small *Buconidæ* (length about 150-210 mm.) with feathers of anterior portion of malar region elongated, more or less pointed; bristles around base of bill very strong; plumage of pileum long and full (forming a rounded, bushy crest when erected), and plumage much variegated with streaks or spots (at least on pileum or dorsal region).

Bill not longer (usually shorter) than head, tapering and decurved terminally, slightly deeper than wide at nostrils, where the depth is equal to nearly (sometimes slightly more than) one-half the distance from nostril to tip of maxilla; culmen straight for basal half or more, gradually but rather strongly decurved terminally, more or less distinctly (but not sharply) ridged; gonys about twice as long as mandibular rami, more or less convex and prominent basally, more or less concave terminally (the tip of mandible slightly decurved), broadly rounded basally, subcarinate terminally; tomia smooth, not strongly if at all deflected basally. Nostril small, oval, obliquely vertical, in anterior end of nasal fossa, concealed (more or less) by the long and strong antrorse prefrontal bristles, which reach to or beyond middle of bill; rictal bristles long and strong; malar apex with smaller antrorse bristles, the chin with long recurved bristles. Wing moderate, much rounded, the longest primaries exceeding secondaries by very little to nearly as much as distance from nostril to tip of maxilla; fifth to seventh primaries longest, ninth shorter than second, tenth (outermost) more than half as long as ninth. Tail less than three-fourths to very nearly as long as wing, strongly rounded or graduated, the lateral rectrices about two-thirds to three-fourths as long as middle pair, the rectrices moderately broad, moderately firm, with tip broadly rounded. Tarsus longer than middle toe with claw.

*Coloration and plumage.*—Above brown, more or less streaked or spotted with buffy or whitish (in one species only the pileum streaked, this with white on a dark gray ground); under parts usually more or less streaked, usually with a jugular area of white, buff, or tawny (sometimes followed by a black pectoral band). Plumage in general very full and lax, the feathers of pileum long (but not narrow), forming when erected a rounded bushy crest; feathers of anterior portion of malar region elongated, more or less pointed, forming a more or less conspicuous pendent tuft on each side of lower jaw, usually differently colored (white) from surrounding parts.

*Range.*—Guatemala and British Honduras to eastern Peru, Bolivia, and southeastern Brazil. (Eight species.)



KEY TO THE CENTRAL AMERICAN SUBSPECIES OF *MALACOPTILA PANAMENSIS*.

- a. Pileum and hindneck rufescent brown, the remaining upper parts more decidedly rufescent; chest ochraceous-buff to tawny. (*Adult males.*)
- b. Breast and sides conspicuously striped; chest tawny-ochraceous to tawny. (Eastern Panama to western Costa Rica.)

*Malacoptila panamensis panamensis*, adult male (p. 388).

- bb. Breast and sides indistinctly striped; chest ochraceous-buff. (Eastern Costa Rica to extreme southern Mexico.)

*Malacoptila panamensis inornata*, adult male (p. 391).

- aa. Pileum and hindneck grayish brown to nearly gray, the remaining upper parts more decidedly brown; chest buff to nearly white. (*Adult females.*)

- b. Breast and sides more distinctly striped; buff of chest deeper.

*Malacoptila panamensis panamensis*, adult female (p. 389).

- bb. Breast and sides less distinctly striped; buff of chest paler.

*Malacoptila panamensis inornata*, adult female (p. 391).

**MALACOPTILA PANAMENSIS PANAMENSIS** Lafresnaye.**PANAMÁ MALACOPTILA.**

*Adult male.*—Above mummy brown or prouts brown to chestnut-brown, passing into russet or chestnut on upper tail-coverts, the feathers of back, scapulars, and wing-coverts with a terminal spot of pale tawny or brownish buffy, the pileum usually similarly but less distinctly spotted, but the spots changing on forehead into narrow streaks; secondaries darker brown than wing-coverts, narrowly edged distally with rusty brown; primaries dusky, the larger quills with median portion of outer web light rusty brown or dull light tawny; tail chestnut-brown or chestnut; orbital region (especially the superciliary portion) tawny, passing into paler on lores, which together with anterior portion of forehead are sometimes slightly intermixed with white; auricular region brown (passing into tawny on upper portion), narrowly and rather indistinctly streaked with tawny; subauricular (postmalar) region darker brown, with broader and very distinct streaks of tawny; pendent mustache-like tufts on anterior portion of malar region white, sometimes tinged or intermixed with tawny; chin and sides of throat brown, the feathers with whitish shaft-streaks; median portion of throat and upper chest, plain tawny or tawny-buff; rest of under parts mostly pale buff or buffy whitish, the feathers of breast and sides broadly edged with brown and dusky, forming conspicuous broad streaks, which become indistinct or obsolete on flanks; under tail-coverts buff or brownish buff; under wing-coverts tawny-ochraceous; inner webs of remiges broadly edged for proximal half with ochraceous-buff; maxilla dark horn color to nearly black, sometimes paler on basal portion of culmen; mandible pale dull yellowish (grayish in life?) dusky at tip; iris reddish brown to chestnut-red; legs and feet dusky (grayish in life?); length (skins), 170-190 (177); wing, 81.5-91 (86.7); tail, 67-81

(74); exposed culmen, 25–30 (27.4); tarsus, 17–19.5 (18.4); outer anterior toe, 14.5–17 (15.7).<sup>a</sup>

*Adult female*.—Similar in pattern of coloration to the adult male, but general color of upper parts much less rufescent (sepia brown to nearly olive), the pileum more grayish brown or brownish gray; throat and chest paler buff, more or less deep, instead of tawny, and general color of posterior under parts purer (less buffy) white; length (skins), 175–190 (185); wing, 83–93 (88.7); tail, 68–84.5 (76.7); exposed culmen, 26–30.5 (28.3); tarsus, 17–20 (18.3); outer anterior toe, 14.5–17 (15.6).<sup>b</sup>

Panamá (Lion Hill, Gatún, Rio Índio, and Rio Pecora, Canal Zone; San Pablo; Divala, Volcán de Chiriquí, El Banco, and Bugaba, Chiriquí; Mina de Chorchá, Verágua; Cascajal, Coclé) and western Costa Rica (Pozo del Rio Grande; Pozo Azul de Pirris; Pozo del Pitál; El Pozo de Terraba; Las Trojas; San Mateo; Santo Domingo de San Mateo; Dota; El General; Boruca; Palmár; Lagarto; La Vijagua; Miravalles). Northwestern Colombia (Rio Truando) (and southward to western Ecuador?).

<sup>a</sup> Twenty-six specimens.

<sup>b</sup> Twenty-five specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Seven adult males from eastern Panama.....	85.7	70.7	26.9	18.4	15.6
Nine adult males from western Panama.....	86.7	73.2	26.8	18.2	15.2
Ten adult males from western Costa Rica.....	87.5	74.4	28.3	18.4	16
Ten adult males from eastern Costa Rica ( <i>M. p. inornata</i> ).....	83.9	73.5	26.4	17.5	15
Four adult males from Nicaragua ( <i>M. p. inornata</i> ).....	83	77.7	25.2	17.2	14.9
One adult male from Honduras ( <i>M. p. inornata</i> ).....	83.5	74.5	25	17	15
Three adult males from British Honduras ( <i>M. p. inornata</i> ).....	84.8	77	26.2	17.5	15.5
One adult male from Guatemala ( <i>M. p. inornata</i> ).....	83.5	78.5	25	18	14.5
One adult male from Tabasco ( <i>M. p. inornata</i> ).....	86	78	26.5	17.5	15.5
FEMALES.					
Six adult females from eastern Panama.....	89	74.8	27.8	18.3	15
Nine adult females from western Panama.....	87.7	76.9	28.3	18	15.4
Ten adult females from western Costa Rica.....	88.7	76.7	28.3	18.3	15.6
Ten adult females from eastern Costa Rica ( <i>M. p. inornata</i> ).....	87	76.8	27.2	17.8	15.7
Seven adult females from Nicaragua ( <i>M. p. inornata</i> ).....	84.9	77.8	27.4	17.6	15.4
One adult female from Honduras ( <i>M. p. inornata</i> ).....	86	82	26	18.5	15
Two adult females from British Honduras ( <i>M. p. inornata</i> ).....	86.2	80.7	27.2	17.5	15.5
Five adult females from Guatemala ( <i>M. p. inornata</i> ).....	86.1	80.5	27.1	17.5	14.9

NOTE.—Many of the specimens included with those measured have not the sex determined by dissection, but have been assumed to be male or female, according to their coloration.

- Malacoptila panamensis* LAFRESNAYE, Rev. Zool., x, March, 1847, 79 (Panama; coll. Delattre, now in coll. Ac. Nat. Sci. Phila.).—SCLATER, Ann. and Mag. N. H., ser. 2, xiii, 1854, 478 (monogr.); Synop. Bucconidæ, 1854, 18; Cat. Am. Birds, 1862, 273, part (Esmeraldas, w. Ecuador); Mon. Jacam. and Puff-Birds, 1882, 119, part, pl. 40; Cat. Birds Brit. Mus., xix, 1891, 196, part (excl. syn. *mystacalis*, *aspera*, *poliopsis*, *æquatorialis*, and *blacica*; <sup>a</sup> also localities Tucurriqui and Peje, Costa Rica, and all South American localities).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 134 (Rio Truando, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill).—SALVIN, Proc. Zool. Soc. Lond., 1870, 201 (Volcan de Chiriqui, Bugaba, and Mina de Chorchá, Panama; crit.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119, part (Las Trojas and Pozo Azul de Pirris, Costa Rica).—CHERRIE, Anal. Inst. Fis.-Geog. C. R., vi, 1893, 19 (Pozo del Pital, Costa Rica); Expl. Zool. Merid. C. R., 1893, 48 (Palmar, Lagarto, and Boruca, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 516, part (San Mateo, Las Trojas, Pozo Azul de Pirris, and Dota Mts., <sup>b</sup> Costa Rica; Panama localities; excl. South American localities and references).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 579 (Pacific slope Costa Rica; habits).
- M[alacoptila] panamensis* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 134, footnote (Panama).
- [*Monasa*] *panamensis* GRAY, Hand-list, i, 1869, 88, no. 1048.
- [*Malacoptila*] *panamensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 106.—SHARPE, Hand-list, ii, 1900, 198, part (Costa Rica and Panama).
- B[ucco] panamensis* GRAY, Gen. Birds, iii, 1849, App., p. 4.
- [*Capito*] *panamensis* BONAPARTE, Consp. Av., i, 1850, 146.
- [*Chaunornis*] *panamensis* BONAPARTE, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).
- Malacoptila costaricensis* CABANIS, Journ. für Orn., x, May, 1862, 172 (Costa Rica; coll. Berlin Mus.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 118 (San Mateo Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 312, part (San Mateo).
- Malacoptila panamensis costaricensis* BERLEPSCH, Journ. für Orn., 1884, 316.
- [*Malacoptila panamensis*] a. Var. *costaricensis* SCLATER, Cat. Birds Brit. Mus., xix, 1891, 196, part (Dota, Costa Rica).
- Malacoptila inornata* (not *Monasa inornata* Du Bus) LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 4 (Lion Hill, Panama); ix, 1868, 118, part (Dota, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Panama; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1870, 201 (Mina de Chorchá, Bugaba, and Volcan de Chiriqui, Panama; crit.).
- [*Malacoptila panamensis*] b. Var. *typica* SCLATER, Cat. Birds Brit. Mus., xix, 1891, 197 (Bugaba and Chorchá, Panama).

### MALACOPTILA PANAMENSIS INORNATA (DuBus).

#### NORTHERN MALACOPTILA.

Similar to *M. p. panamensis* but breast and sides much less distinctly streaked (in the adult male often entirely unstreaked); adult male with throat and chest paler tawny, not darker than color of

<sup>a</sup> These names pertain to South American forms which, while they may be conspecific with *M. panamensis*, certainly are subspecifically distinct. Lack of material prevents me from including the extralimital forms in the "key" on p. 388.

<sup>b</sup> Other Costa Rica localities mentioned pertain to *M. p. inornata*.



breast, etc., the under parts sometimes nearly uniform tawny-ochraceous; adult female with throat and chest pale buff, the remaining under parts less purely white (often pale buff); wing, bill, and tarsus averaging decidedly shorter, tail averaging slightly longer.

*Adult male*.—Length (skins), 170–190 (182); wing, 80–88 (83.9); tail, 70–79.5 (75.4); exposed culmen, 23.5–27 (26.1); tarsus, 16–18.5 (17.5); outer anterior toe, 14–16.5 (15.1).<sup>a</sup>

*Adult female*.—Length (skins), 175–195 (184); wing, 82–90.5 (86.2); tail, 72.5–85 (77.8); exposed culmen, 25–28.5 (27.4); tarsus, 17–18.5 (17.6); outer anterior toe, 14.5–16 (15.4).<sup>b</sup>

Caribbean slope of Costa Rica (Sipúrio and Rio Sícsola, Talamanca; Rio Súcio; Guácimo; Guápiles; Guaitíl; Guayabo; El Hogár; Carrillo; Cuabre; Angostura; Pacuare; San Carlos; La Vijagua) and northward through Nicaragua (Chontales; Greytown; Rio Grande; Rio Escondido; Rio Coco; Savala, Uluce, and Tuma, Matagalpa; San Carlos; Santo Domingo; Rama), Honduras (San Pedro Sula), British Honduras (Toledo District; Moho River), Guatemala (Choctúm; Cobán; Chiséc; Los Amates, Yzabál), and Salvadór to Tabasco (Teapa).

*Monasa inornata* DuBUS, Bull. Ac. Roy. Belg., xiv, pt. 2, no. 8, Aug., 1847, 107 (Guatemala; coll. Brussels Mus.).—LAFRESNAYE, Rev. Zool., 1848, 249.—BONAPARTE, Consp. Av., i, 1850, 147.

*M[onasa] inornata* GRAY, Gen. Birds, Ann. Birds, iii, 1849, App., p. 4.

*Malacoptila inornata* SCLATER, Ann. and Mag. N. H., ser. 2, xiii, 1854, 478 (monogr.); Synop. Bucconidæ, 1854, 19; Proc. Zool. Soc. Lond., 1855, 196 (east Peru); Cat. Am. Birds, 1862, 273 (Choctum, Guatemala); Mon. Jacam. and Puff-Birds, 1882, 125, pl. 41; Cat. Birds Brit. Mus., xix, 1891, 197 (Chisec, Vera Paz, Guatemala).—SALVIN and SCLATER, Ibis, 1860, 40 (Coban, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 118, part (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 311, part (Pacuare, Costa Rica).—BOUCARD, Liste Ois. récol. Guat., 1878, 24.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 517 (San Carlos, Rama, Santo Domingo, etc., Nicaragua; etc.).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 91 (Los Amates, Yzabál, Guatemala; habits).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 580 (Caribbean slope, Costa Rica).

[*Malacoptila inornata*] SCLATER and SALVIN, Nom. Av. Neotr., 1873, 106.—SHARPE, Hand-list, ii, 1900, 198.

*Malacoptila veræ-pacis* SALVIN and SCLATER, Ibis, ii, Jan., 1860, 40 (Coban, Guatemala; coll. Salvin and Godman).—SCLATER, Cat. Am. Birds, 1862, 273 (Choctum, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 183 (Greytown, Nicaragua); ix, 1868, 118 (Pacuare and Guaitil, Costa Rica).

*M[alacoptila] verae-pacis* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 139 (Guatemala).

*Malacoptila veraepacis* FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).

*Malacoptila verapacis* LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 183 (Greytown, Nicaragua).

<sup>a</sup> Twenty specimens.

<sup>b</sup> Twenty-five specimens.

- Malacoptila panamensis* (not of Lafresnaye) BOUCARD, Proc. Zool. Soc. Lond., 1878, 47 (San Carlos, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 119, part (Guaitil, Angostura, and Jimenez, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xix, 1891, 196, part (Tucurriqui and Peje, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 512 (Rio Escondido, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 516, part (Guaitil, Angostura, Pacuare, Jimenez, Peje, and San Carlos, Costa Rica).—(?) UNDERWOOD, Ibis, 1896, 444 (Volcan de Miravalles, Costa Rica).
- Malacoptila costaricensis* (not of Cabanis) FRANTZIUS, Journ. für Orn., 1869, 312, part (Pacuare, Costa Rica).
- [*Malacoptila panamensis*] a. Var. *costaricensis* SCLATER, Cat. Am. Birds, xix, 1891, 196, part (Tucurriqui and Peje, Costa Rica).
- (?) *Malacoptila fuliginosa* RICHMOND, Proc. U. S. Nat. Mus., xvi, no. 947, Oct. 4, 1893, 512, in text (Rio Escondido, e. Nicaragua; coll. U. S. Nat. Mus.; ex Ridgway, manuscript).<sup>a</sup>
- [*Malacoptila*] *fuliginosa* SHARPE, Hand-list, ii, 1900, 198.

### Genus MONASA Vieillot.

- Monasa* <sup>b</sup> VIEILLOT, Analyse, 1816, 27. (Type, *Coucou noir de Cayenne* Buffon = *Cuculus tranquillus* Gmelin = *C. niger* Müller.)
- Monassa* (emendation) SWAINSON, Classif. Birds, ii, 1837, 334.
- Monastes* (emendation) NITZSCH, Pterylographie, 1840, 135.
- Monasta* (emendation) CABANIS, in Wiegmann's Archiv für Naturg., xiii, pt. 1, 1847, 347.—CABANIS and HEINE, Mus. Hein., iv, heft i, 1863, 126.
- Monaca* (emendation) TEMMINCK, Pl. Col., iii, 1825, text to pl. 323, fig. 2.
- Monacha* (not of Fitzinger, 1833, nor Swainson, 1837) SCLATER, Proc. Zool. Soc. Lond., June 21, 1881, 777 (emendation).
- Monadon* <sup>c</sup> (not *Monodon* Linnæus, Cuvier, Schweigg, or Gervais) "Vieillot," STEPHENS, Shaw's Gen. Zool., ix, pt. 1, 1815 (1816?), 42. (Type, *Bucco cinereus* Gmelin.)
- Lypornix* WAGLER, Syst. Av., 1827, 159 [by count]. (Type, *Cuculus tranquillus* Gmelin = *C. niger* Müller.)
- Scotocharis* GLOGER, in Froriep's Notizen, xvi, 1827, 277. (Type, *Cuculus niger* Müller.)
- (?) *Barbacou* <sup>d</sup> VOIGT, Thierreich, i, 1831, 703. (Type, ———?; species mentioned are *Monasa tranquilla* Vieillot, *Bucco tenebrosus* Lichtenstein, *Cuculus rufalbinus* Temminck, and *Monasa personata* Vieillot.)

Large Bucconidæ (length about 230–280 mm.) with decurved, yellow, orange, or red bill and plain slate colored or blackish coloration, the forehead and chin sometimes whitish or fulvous, the smaller wing-coverts sometimes partly white.

Bill about as long as head or a little shorter, much deeper than broad at nostrils, tapering rather rapidly (in lateral profile) toward tip, which is distinctly though not strongly decurved; culmen straight, or nearly so, for basal half or more, strongly but not abruptly de-

<sup>a</sup> The type of *M. fuliginosa* remains unique in its very dark, sooty coloration, no other specimen among the several hundred Central American examples examined closely approaching it in this respect.

<sup>b</sup> "μοναστής, qui solus vivit." (Vieillot.)

<sup>c</sup> *Μόνος*, single; *ὀδών*, a tooth. (Richmond.)

<sup>d</sup> From Barbu + Coucou. (Richmond.)

curved terminally, indistinctly ridged; gonys about twice as long as mandibular rami, straight or faintly convex basally, more or less concave terminally, indistinctly ridged or narrowly rounded terminally, broadly rounded basally; commissure more or less strongly arched though nearly straight basally, the tomia smooth. Nostril small, ovoid, obliquely vertical, in anterior end of nasal fossa. Feathers all around base of bill long, bristle-like, antrorse, those at base of maxilla decurved, those of chin recurved. Wing moderate, the longest primaries more or less distinctly longer than longest secondaries; fifth to seventh (usually the sixth, rarely the seventh) primary longest, the ninth not longer than third, sometimes shorter than second, the tenth (outermost) more than half as long as ninth. Tail six-sevenths to quite as long as wing, rounded (lateral rectrices about five-sixths to six-sevenths as long as middle pair), the rectrices rather broad and firm, broadly rounded at tip. Tarsus longer than outer anterior toe without claw.

*Coloration and plumage.*—Plain slate color or slate-gray deepening into black on primaries, tail and head (sometimes on back, scapulars, and wing-coverts also), sometimes with white on lesser wing-coverts or under wing-coverts, sometimes with forehead and chin white or fulvous; in one species the wing-coverts light gray; bill red, orange, or yellow.

*Range.*—Nicaragua to eastern Ecuador, Bolivia, southeastern Brazil, and Cayenne. (Twelve or more species.)

#### KEY TO THE SPECIES OF *MONASA*.<sup>a</sup>

- a. No white on wings; back slate color.
  - b. Fore part of head partly white (adults) or rusty (young).
    - c. Forehead, lores, and chin white or rusty.
      - d. Malar apex black.
        - e. Larger (wing 133–149.5, averaging 139.8 in male, 144.3 in female; exposed culmen 35–45, averaging 37.1 in male, 38.5 in female); lower throat, crown, and occiput black; white “capistrum” larger. (Eastern Costa Rica and eastern Nicaragua).....***Monasa grandior*** (p. 395).
        - ee. Smaller (wing, 121.5–132.5, averaging 127.6; exposed culmen, 31.5–33.5, averaging 32.5); lower throat, crown, and occiput slate color or slate-gray. (Lower Amazon Valley).....***Monasa rikeri*** (extralimital).<sup>b</sup>
      - dd. Malar apex white.
        - e. Whole head and neck (except white capistrum) black; remiges (except inner secondaries) deep black, contrasting strongly with slate-gray of wing-coverts. (Eastern Panama).....***Monasa fidelis*** (p. 397).

<sup>a</sup> For the present I do not attempt to discriminate between species and subspecies in this genus, a very much larger amount of material being required for the proper understanding of all the forms and their relationships.

<sup>b</sup> *Monasa morpheus* (not *Bucco morphoeus* Hahn and Küster) Allen, Bull. Essex Inst., viii, 1876, 80 (Santarem, Lower Amazon); Riker and Chapman, Auk, viii, 1891, 158 (Santarem).—*Monasa rikeri* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 88 (Diamantina, Lower Amazon; coll. U. S. Nat. Mus.).



ee. Posterior half of head and entire neck slate-color; remiges slate-black or blackish slate, broadly edged with slate-gray, not contrasting strongly with color of wing-coverts.

f. Larger (wing averaging 128.1, tail 117.9, exposed culmen 32.6); white capistrum larger. (Eastern Brazil, south of Amazon River.)

**Monasa morphoeus** (extralimital).<sup>a</sup>

ff. Smaller (wing averaging 126.5, tail 112.7, exposed culmen 30.5); white capistrum more restricted. (Eastern Ecuador, eastern Peru, and Bolivia) ..... **Monasa peruana** (extralimital).<sup>b</sup>

cc. Only the forehead and lores white or rusty (the chin and malar apex black).

d. Wing-coverts slate-gray, concolor with lower back and rump; under wing-coverts slate-gray.

e. Chest slate-gray, like breast, abdomen, etc. (Central Colombia.)

**Monasa sclateri** (extralimital).<sup>c</sup>

ee. Chest black, like head and neck, abruptly contrasted with slate-gray of breast, etc. (Eastern Panama) ..... **Monasa similis** (p. 399).

dd. Wing-coverts pale gray, decidedly to much paler than color of lower back and rump, at least toward humeral edge of wing; under wing-coverts very pale gray to grayish white.

e. Lower back and rump slate-gray; wing-coverts and under parts of body lighter slate-gray, the former still paler toward humeral edge of wing. (Southeastern Panama) ..... **Monasa minor** (p. 398).

ee. Lower back and rump light slate-gray (dark gull gray), the under parts of body slightly paler (light neutral gray or deep gull gray); larger wing-coverts light neutral gray or deep gull gray fading into pale or pallid neutral gray on anterior lesser coverts. (Rio Truando, northwestern Colombia) ..... **Monasa pallescens** (p. 397).

<sup>a</sup> *Bucco morphoeus* Hahn and Küster, Vög. aus Asien, lief. xiv, 1822, p. 1, pl. 2.—*Monasa morphoeus* Cassin, Proc. Ac. Nat. Sci. Phila., 1860, 135.—*Monasa morphæus* Sclater, Cat. Am. Birds, 1862, 274 (Brazil).—*M[onasta] morphea* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 127 (Brazil).—*Monacha morphæus* Sclater, Mon. Jacam. and Puff-Birds, 1882, 151, pl. 50; Cat. Birds Brit. Mus., xix, 1891, 204.—*Monasa personata* Vieillot, Gal. Ois., 1820-25, 23, pl. 36 (Brazil; "l'île de la Trinité.")—*B[ucco] leucops* Lichtenstein, Verz. Doubl., 1823, 8 (Brazil).—*Lypornix leucops* Wagler, Syst. Av., 1827, Lypornix, sp. 3.—*C[apito] leucops* Maximilian, Beitr., iv, 1832, 368.—*T[amatia] leucops* Swainson, Birds Brazil, 1834, pl. 12.—*M[onasa leucops]* Gray, Gen. Birds, i, Dec. 1846, 74.—*Monasa leucops* Burmeister, Syst. Ueb. Th. Bras., ii, 1856, 293; Pelzeln, Orn. Bras., 1868, 22.—*Bucco albifrons* Spix, Av. Bras., i, 1824, 53, pl. 41, fig. 1 (Prov. Piauh, Brazil).

<sup>b</sup> *Monasa peruana* Sclater, Proc. Zool. Soc. Lond., 1855, 194 (Chamicuros, e. Peru; coll. P. L. Sclater; ex Bonaparte and Verreaux, manuscript).—*Monasa morphoeus peruana* Hellmayr, Novit. Zool., xiv, 1907, 84 (Teffé, Brazil; crit.).—*M[onasta] peruana* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 128.—*Monacha peruana* Sclater, Mon. Jacam. and Puff-Birds, 1882, 153, pl. 51; Cat. Birds Brit. Mus., xix, 1891, 205 (Ega, Pebas, and Chamicuros, e. Peru; Sarayacu, e. Ecuador).

<sup>c</sup> *Monasa pallescens* (not of Cassin) Wyatt, Ibis, 1871, 130, 374 (Paturia, Magdalena Valley, Colombia); Sclater and Salvin, Proc. Zool. Soc. Lond., 1879, 536 (Remedios and Nichi, Antioquia, Colombia); Berlepsch, Journ. für Orn., 1884, 318 (Bucaramanga, Colombia); Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1896, 521, part.—*Monacha pallescens* Sclater, Mon. Jacam. and Puff-Birds, 1882, 157, pl. 53; Cat. Birds Brit. Mus., xix, 1891, 206 (Medellin and Remedios, Antioquia; Magdalena Valley; Bogotá).—*Monasa sclateri* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 89 (Bogotá, Colombia; coll. U. S. Nat. Mus.).

bb. Fore part of head entirely black. (Amazon Valley.)

*Monasa nigrifrons* (extralimital).<sup>a</sup>

aa. With white on wings; back black.

b. Larger (wing about 135); proximal middle and greater wing-coverts broadly tipped with grayish white; under wing-coverts light gray; bill red (in life). (Guianas and Lower Amazon Valley).....*Monasa nigra* (extralimital).<sup>b</sup>

bb. Smaller (wing about 115); middle and greater wing-coverts entirely black, but anterior part of lesser covert area and whole of under wing-coverts white; bill clear lemon yellow. (Colombia to eastern Peru.)

*Monasa flavirostris* (extralimital).<sup>c</sup>

### MONASA GRANDIOR Sclater and Salvin.

#### COSTA RICAN MONASA.

*Adults (sexes alike).*—A frontal area, involving anterior portion of forehead, antrorse supranasal plumes, and greater part of lores, and another on chin and upper throat, dull buffy white or (in younger birds?) tawny-buff; rest of head uniform black passing gradually into uniform slate color on hindneck, back, scapulars, wing-coverts, rump, and upper tail-coverts, and into slate-gray on under parts, the latter very slightly paler gray posteriorly; remiges slate-black, the secondaries edged with slate color, the outer web of inner (proximal) secondaries mostly slate color; tail bluish black; bill bright orange-

<sup>a</sup> *Bucco nigrifrons* Spix, Av. Bras., i, 1824, 53, pl. 41, fig. 2.—*M[onasa] nigrifrons* Gray, Gen. Birds, i, 1846, 74.—*Monasa nigrifrons* Gray, List Fissirostr. Birds Brit. Mus., 1848, 49; Sclater, Ann. and Mag. N. H., ser. 2, xiii, 1854, 481 (monogr.); Synop. Bucconidæ, 1854, 22.—*M[onasta] nigrifrons* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 127.—*Monacha nigrifrons* Sclater, Mon. Jacam. and Puff-Birds, 1882, 159, pl. 54; Cat. Birds Brit. Mus., xix, 1891, 206.—*Lypornix unicolor* Wagler, Syst. Av., 1827, *Lypornix*, sp. 2.

<sup>b</sup> *Cuculus niger* Müller, Syst. Nat. Suppl., 1776, 90 (Cayenne; based on *Coucou noir de Cayenne* Daubenton, Pl. Enl., pl. 512).—*Monacha nigra* Sclater, Mon. Jacam. and Puff-Birds, 1882, 145, pl. 48; Cat. Birds Brit. Mus., xix, 1891, 203.—*Cuculus ater* Boddaert, Tabl. Pl. Enl., 1783, 30 (based on Pl. Enl., pl. 512).—*Monasa atra* Gray, List Fissirostr. Birds Brit. Mus., 1848, 49; Sclater, Ann. and Mag. N. H., ser. 2, xiii, 1854, 480 (monogr.); Synop. Bucconidæ, 1854, 21.—*M[onasta] atra* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 126 (Cayenne).—[*Corvus*] *australis* Gmelin, Syst. Nat., i, pt. 1, 1788, 377 (Cayenne; founded on *Cayenne red-billed Crow* Latham, Syn., i, pt. i, 403).—[*Bucco*] *cinereus* Gmelin, Syst. Nat., i, pt. 1, 1788, 409 (Cayenne; founded on *Wax-billed Barbet* Latham, Syn., i, pt. ii, 507).—[*Cuculus*] *tranquillus* Gmelin, Syst. Nat., i, pt. 1, 1788, 417 (founded on *Cayenne black Cuckoo* Latham, Syn., i, pt. ii, 543).—*Monasa tranquilla* Vieillot, Nouv. Dict. d'Hist. Nat., xxi, 1818, 321.—*Lypornix tranquilla* Wagler, Syst. Av., 1827, *Lypornix*, sp. 1.—[*Bucco*] *calcaratus* Latham, Index Orn., i, 1790, 206 (Cayenne).—*Corvus affinis* Shaw, Gen. Zool., vii, pt. ii, 1809, 381 (based on *Cayenne red-billed Crow* Latham, Syn., i, pt. ii, 543).

<sup>c</sup> *Monasa flavirostris* Strickland, Jardine's Contr. Orn., 1850, 47, pl. 48 (Peru; coll. Acad. Nat. Sci. Phila.); Sclater, Ann. and Mag. N. H., ser. 2, xiii, 1854, 481 (monogr.); Synopsis Bucconidæ, 1854, 21.—*M[onasta] flavirostris* Cabanis and Heine, Mus. Hein., iv, heft 1, 1863, 127.—*Monacha flavirostris* Sclater, Mon. Jacam. and Puff-Birds, 1882, 149, pl. 49; Cat. Birds Brit. Mus., xix, 1891, 204.—*Monasa axillaris* Lafresnaye, Rev. Zool., 1850, 216.

red in life, fading to dull orange in dried skins; iris chestnut; <sup>a</sup> legs and feet blackish (in dried skins).

*Young*.—Similar to adults, but general coloration duller, more sooty, frontal area tawny, and chin and throat black, more or less broken by indistinct streaks of dull brownish white or pale tawny; bill pinkish; <sup>a</sup> iris dark brown.<sup>a</sup>

*Adult male*.—Length (skins), 255–293 (273); wing, 133–146.5 (139.8); tail, 117.5–132 (123); exposed culmen, 35–39 (37.1); tarsus, 20–22 (21.1); outer anterior toe, 17.5–20 (18.9).<sup>b</sup>

*Adult female*.—Length (skins), 270–295 (286); wing, 139–149.5 (144.3); tail, 121.5–132.5 (126.9); exposed culmen, 36–40.5 (38.5); tarsus, 21–22 (21.4); outer anterior toe, 17–19.5 (18.6).<sup>c</sup>

Caribbean slope of Costa Rica (Sipúrio, Talamanca; Siquirres; Rio Súcio; Rio Banana; El Hogár; Guápiles; Guácimo; Cuabre; Pacuare; Angostura; Jiménez; San Carlos; La Vijagua) and Nicaragua (La Libertád, Chontales; Vizagua; Rio Tuma, Matagalpa; Mosquito coast).

*Monasa peruana* (not of Sclater) LAWRENCE, Ann. Lyc. N. Y., ix, 1863, 118 (San Carlos, "San José" i. e. Talamanca, Pacuare, and "Payna," Costa Rica), 146 (Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 312 (San Carlos; Pacuare).

*Monasa grandior* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 327 (Angostura, Costa Rica; coll. Salvin and Godman).—SALVIN, Ibis, 1872, 322 (Chontales, Nicaragua).—ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 120 (Rio Súcio and Jimenez, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 520 (Mosquito coast, Chontales, and La Libertad, Nicaragua; Angostura, Pacuare, San Carlos, "San José," Rio Súcio, and Jimenez, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 581 (Caribbean lowlands of Costa Rica, up to 1,200 or 1,800 ft.; habits).

*M[onasa] grandior* SALVIN, Ibis, 1869, 315 (Costa Rica).

[*Monasa*] *grandior* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 106.—SHARPE, Hand-list, ii, 1900, 200.

*Monacha grandior* SCLATER, Mon. Jacam. and Puff-Birds, 1882, 155, pl. 52; Cat. Birds Brit. Mus., xix, 1891, 205.

<sup>a</sup> José C. Zeledón, manuscript.

<sup>b</sup> Twenty-five specimens.

<sup>c</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Outer anterior toe.
MALES.					
Ten adult males from Costa Rica.....	139.3	121.9	37.1	21.2	18.6
Five adult males from Nicaragua.....	140.7	125	37	21	19.3
FEMALES.					
Ten adult females from Costa Rica .....	144.5	127.1	38.6	21.4	18.5
One adult female from Nicaragua.....	141.5	125.5	37.5	21	19.5



**MONASA FIDELIS** Nelson.**GOLDMAN'S NUN BIRD.**

Similar to *M. morphæus* and *M. peruana* in having the malar apex as well as forehead and chin white or pale rusty, but differing in having the whole head (otherwise), neck, and upper chest black, rather abruptly defined against the bluish slate color of back and bluish slate-gray of breast.

*Adult male*.—Frontal area (including forehead, antorse supranasal plumes, and greater part of lores), anterior portion of malar region, chin, and upper throat dull white, slightly tinged with rusty brown; rest of head, together with neck, all round, uniform black, passing into slate-black on upper chest; back, scapulars, wing-coverts, rump, and upper tail-coverts uniform bluish slate color; remiges black, faintly glossed with greenish blue, the distal secondaries narrowly edged with slate color, the innermost secondaries mostly slate color laterally; tail slightly glossy bluish black; under parts of body plain bluish slate-gray, very slightly paler posteriorly, the under tail-coverts, however, rather darker; under wing-coverts clear slate gray, slightly lighter than under parts; bill bright red; legs and feet dusky (in dried skins); length (skin), 258; wing, 136.5; tail, 115; exposed culmen, 38.5; tarsus, 20; outer anterior toe, 19.<sup>a</sup>

Eastern Panamá (Cerro Azúl, Canal Zone).

*Monasa fidelis* NELSON, Smithsonian Misc. Coll., vol. 56, no. 37, Feb. 16, 1912, 1 (Cerro Azul, Panamá, 800 ft. alt.; coll. U. S. Nat. Mus.).

**MONASA PALLESCENS** Cassin.**PALE-WINGED NUN BIRD.**

*Adults (sexes alike)*.—A frontal area, involving anterior portion of forehead, antorse supranasal plumes, and greater part of lores, cinnamon or cinnamomeous white; rest of head, including chin and throat, black, passing into slate-black on neck (all round); back, scapulars, and rump uniform slate-gray; wing-coverts much paler gray (about no. 6 or no. 7) paling into about no. 10 gray on anterior portion of lesser covert area; alula, primary coverts, and remiges black or slate-black, the innermost (proximal) secondaries mostly slate-gray; upper tail-coverts blackish slate or slate-black; tail uniform bluish black; under parts light gray, nearly like wing-coverts, usually slightly darker anteriorly, where sometimes rather abruptly defined against the blackish slate or slate-black of foreneck; bill orange-red in life, fading into dull pale red or reddish white in dried skins; legs and feet grayish brown (in dried skins).

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<sup>a</sup> One specimen (the type).

*Adult male*.—Wing, 143.<sup>a</sup>

*Adult female*.—Wing, 141; tail, 117; exposed culmen, 34; tarsus, 20.5; outer anterior toe, 19.<sup>b</sup>

Three other specimens, with sex undetermined, measure as follows: Wing, 135.5–141.5 (139); tail, 115–127 (120); exposed culmen (bills all defective); tarsus, 19.5–20 (19.8); outer anterior toe, 18.5–19.5 (19). All are alike in coloration, except that in some (perhaps younger birds) the capistrum is decidedly rusty.

Northwestern Colombia, near eastern extremity of Isthmus of Panamá (Rio Truando; Truando Falls; Rio Atrato).

*Monasa pallescens* CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 134 (Cordilleras of the Rio Truando, n. w. Colombia; coll. Ac. Nat. Sci. Phila.); 1864, 287, pl. 4 (Rio Atrato).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 521, part (Rio Truando).

[*Monasa*] *pallescens* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 106, part.—SHARPE, Hand-list, ii, 1900, 200, part.

*M[onasta] pallescens* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 128, footnote (Rio Truando).

*Monacha pallescens* SCLATER, Mon. Jacam. and Puff-Birds, 1882, 157, part (not pl. 53 nor descr., which = *M. sclateri*); Cat. Birds Brit. Mus., xix, 1891, 206, part (in synonymy only).

#### MONASA MINOR (Nelson).

##### MARRAGANTI NUN BIRD.

Similar to *M. pallescens* but color of wing-coverts and under parts decidedly darker. Similar also to *M. similis*, but color of wing-coverts (especially the under wing-coverts) decidedly paler, and black of foreneck and upper chest much intermixed with gray.

*Adult male*.—Lores (except portion immediately in front of eye) and anterior portion of forehead white, tinged or stained with dull cinnamon or fawn color; rest of forehead dull black, passing gradually into more sooty or slaty black on crown, this gradually becoming more and more tinged with dull slate toward the upper back, which is dull slate color; rest of head and neck black, the foreneck intermixed, longitudinally, with slate-gray, the remaining under parts light slate-gray or deep plumbeous, slightly paler on abdomen, darker, or intermixed with blackish slate, on under tail-coverts; lower back, scapulars, rump, and shorter upper tail-coverts uniform slate-gray; wing-coverts light slate-gray (between no. 6 gray and neutral gray); remiges, rectrices, and longer upper tail-coverts black, the two innermost secondaries with outer webs deep slate-gray, the third (sometimes fourth also) edged with the same; under wing-coverts light neutral gray, becoming still paler toward edge of wing; bill red; legs and feet slaty blackish (in dried skins); length (skins),

<sup>a</sup> One specimen (the type); specimen defective.

<sup>b</sup> One specimen.

272-275 (273.5); wing, 131.5-132 (131.7); exposed culmen, 35-36.5 (35.7); tarsus, 22-22.5 (22.2); outer anterior toe, 17.5-18 (17.7).<sup>a</sup>

Southeastern Panamá (Marraganti).

*Monasa pallescens minor* NELSON, Proc. Biol. Soc. Wash., xxvi, March 22, 1913, 67 (Marraganti, eastern Panamá; coll. U. S. Nat. Mus.).

### MONASA SIMILIS Nelson.

#### CERRO AZÚL NUN BIRD.

Similar to *M. pallescens* in restriction of the white or pale rusty frontal area to anterior portion of forehead, lores, and supranasal plumes (the head otherwise entirely black), but color of back, scapulars, rump, wing-coverts, and under parts of body much darker (the back dark slate instead of slate-gray, the wing-coverts uniform slate-gray instead of light gray posteriorly, becoming still paler—no. 8 or no. 9 gray—anteriorly).

*Adult female*.—A frontal area, involving anterior portion of forehead, supranasal plumes, and greater part of lores, dull white or pale rusty brownish; rest of head, together with neck, all round, uniform black, passing into slate-black on upper chest; back, scapulars, rump, and upper tail-coverts plain slate color, the first darker anteriorly; wing-coverts uniform deep bluish slate-gray; remiges black, faintly glossed with greenish, the proximal secondaries narrowly edged with slate color, increasing in extent to the innermost, which are mostly slate color; tail slightly glossy bluish black; under parts of body (posterior to chest) plain slate-gray, very slightly darker anteriorly, where rather abruptly defined against the slate-black of chest, the under tail-coverts darker; under wing-coverts clear slate-gray, paler than under parts; bill bright red; legs and feet dusky (in dried skin); length (skin), 281; wing, 140; tail, 127; exposed culmen, 40; tarsus, 20; outer anterior toe, 19.<sup>b</sup>

Eastern Panamá (Cerro Azúl, Canal Zone).

(?) *Monasa pallescens* (not of Cassin?) SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, p. 8 (Punta de Sabana, Panamá).

*Monasa similis* NELSON, Smithsonian. Misc. Coll., vol. 56, no. 37, Feb. 16, 1912, 1 (Cerro Azul, Panamá, 800 ft. alt.; coll. U. S. Nat. Mus.).

### Genus NONNULA Sclater.

*Nonnula* SCLATER, Proc. Zool. Soc. Lond., 1853, 124. (Type, *Bucco rubecula* Spix.)

*Microtrogon* c BERTONI, Aves Nuevas del Paraguay, 1901, 41. (Type, *M. fulvescens* Bertoni=*Bucco rubecula* Spix.)

Very small Bucconidæ (length about 125-145 mm.) with the rather slender, slightly decurved, slightly compressed bill equal to or slightly

<sup>a</sup> Two specimens.

<sup>b</sup> One specimen (the type).

<sup>c</sup> *Μικρός*, small; + *Trogon* (τρώγω, I gnaw, I eat). (Bertoni.)



longer than head; short, very much rounded wing (less than two and a half times as long as culmen, from base), and very plain coloration, the upper surface plain brown (sometimes rufescent on pileum), the under parts plain ochraceous, sometimes passing into white on abdomen and under tail-coverts.

Bill as long as or slightly longer than head, narrow, slightly compressed, very slightly decurved terminally, its depth at anterior end of nostrils slightly greater than its width at same point and equal to a little more than one-third the distance from nostril to tip of maxilla; exposed culmen about as long as combined length of tarsus and first and second phalanges of outer anterior toe, straight for basal half (more or less), then very gently but increasingly decurved terminally, rather distinctly ridged; gonys twice as long as mandibular rami, or slightly more, very faintly convex and broadly rounded basally, very faintly concave and indistinctly ridged terminally; maxillary tomium faintly concave for most of its length. Nostril obliquely broadly oval, in anterior end of nasal fossa, completely hidden by the overlying very rigid but slender, decurved, antrorse prefrontal bristles. Rictal bristles recurved, long and very strong; antrorse bristles of malar apex smaller but well developed; feathers of chin antrorse, with very long, recurved, bristly tip, these bristles, as well as the prefrontal ones, with distinct lateral pinnæ. Wing short (scarcely three times as long as exposed culmen), much rounded, the longest primaries exceeding distal secondaries by much less than length of tarsus; fifth, sixth, and seventh primaries longest, the eighth equal to or slightly shorter than fourth, the ninth equal to or slightly shorter than first, the tenth (outermost) about half as long as longest primary or slightly less. Tail about as long as wing, graduated for about two-sevenths its length (about length of tarsus), the rectrices rather narrow. Tarsus nearly as long as middle toe with claw, slender.

*Plumage and coloration.*—Plumage in general full, lax, and blended; remiges and rectrices rather soft. Above plain brown, the pileum sometimes rufescent, beneath ochraceous or tawny, sometimes passing into white on abdomen and under tail-coverts.

*Range.*—Eastern Panamá to northeastern Peru and central Brazil. (Five species.)<sup>a</sup>

KEY TO THE BROWN-HEADED SPECIES OF NONNULA.

- a. Under tail-coverts and anal region white; pileum chestnut or more or less strongly tinged with that color, the back distinctly more olivaceous.

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<sup>a</sup> The above generic description is taken from *N. frontalis* only, that being the only species available when description was written.

b. Pileum uniform chestnut, strongly contrasted with the gray of hindneck and sides of head. (Lower Amazon Valley to southeastern Brazil.)

*Nonnula ruficapilla* (extralimital).<sup>a</sup>

bb. Pileum distinctly chestnut only on forehead, the hindneck brown, like back, the gray on sides of head much more restricted. (Eastern Panama to central Colombia).....*Nonnula frontalis* (p. 401).

aa. Under tail-coverts and anal region ochraceous; pileum brown, concolor with back; no gray on sides of head. (Colombia to eastern Peru.)

*Nonnula brunnea* (extralimital).<sup>b</sup>

### NONNULA FRONTALIS (Sclater).

#### PANAMÁ NONNULA.

*Adults (sexes alike).*—Pileum plain brown (nearly prouts brown), passing into more chestnut brown on forehead, and posteriorly into lighter olive-brown or sepia brown on hindneck, back, scapulars, wing-coverts, rump, and upper tail-coverts; remiges and rectrices dusky grayish brown, the secondaries narrowly edged with light ochraceous-brown, the primaries with lighter and more grayish brown; lateral rectrices much paler brown, except on proximal half, more or less, of inner web; loreal, superciliary, orbital, and auricular regions mouse gray, rather sharply defined against the reddish brown of pileum, but below and posteriorly passing gradually into light tawny-brown (nearly raw umber) on malar region and sides of neck; chin, throat, and chest plain tawny-ochraceous, the sides and flanks similar but paler (buffy) posteriorly, passing into buff on center of breast and then into buffy white on abdomen; under tail-coverts white; under wing-coverts and broad edgings to inner webs of remiges (except distally) pinkish buff, the carpo-metacarpal region brown; maxilla grayish black; mandible grayish black terminally and along upper edge, otherwise horn color (bluish gray in life?); iris brown;<sup>c</sup> bare orbital ring pomegranate purple;<sup>a</sup> legs and feet brownish (in dried skins).

*Adult male.*—Length (skins), 134–138.5 (136); wing, 58–60.5 (59); tail, 54.5–58.5 (57); exposed culmen, 22.5–23 (22.7); tarsus, 14–15 (14.7); outer anterior toe, 11–11.5 (11.1).<sup>d</sup>

<sup>a</sup> *L[ypornix] ruficapilla* Tschudi, in Wiegmann's Archiv für Naturg., 1844, pt. i, 300 (Peru).—*M[onasa] ruficapilla* Gray, Gen. Birds, i, 1846, 74.—*Malacoptilaruficapilla* Sclater, Ann. and Mag. N. H., ser. 2, xiii, 1854, 480.—[*Scotocharis*] *ruficapilla* Bonaparte, Ateneo Italiano, ii, 1854, 128 (Consp. Volucr. Zygod., 1854, 13).—*Nonnula ruficapilla* Sclater, Proc. Zool. Soc. Lond., 1853, 123; Mon. Jacamars and Puff-birds, 1882, 137, pl. 46, fig. 1; Cat. Birds Brit. Mus., xix, 1891, 200.

<sup>b</sup> *Nonnula brunnea* Sclater, Ibis, ser. 4, v, Oct., 1881, 600 (Sarayacu, e. Ecuador; coll. P. L. Sclater); Mon. Jacam. and Puff-birds, 1882, 141, pl. xlvii, fig. 2, and text; Cat. Birds Brit. Mus., xix, 1891, 201 (int. Colombia; Rio Napo and Sarayacu, e. Ecuador).

<sup>c</sup> W. W. Brown, Jr., manuscript.

<sup>d</sup> Four specimens.

*Adult female*.—Length (skins), 138–149 (143); wing, 56.5–62 (58.9); tail, 53.5–62.5 (57.9); exposed culmen, 20–23 (21.5); tarsus, 13.5–15.5 (14.5); outer anterior toe, 11–11.5 (11.1).<sup>a</sup>

Eastern Panamá (Lion Hill; Cana, Darién) through Colombia (Bogotá) to eastern Ecuador (Rio Napo).

*Malacoptila frontalis* SCLATER, Ann. and Mag. N. H., ser. 2, xiii, 1854, 479 (interior of Colombia; coll. Brit. Mus.); Synop. Bucconidæ, 1854, 20; Proc. Zool. Soc. Lond., 1855, 136 (Bogotá, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 318 (Lion Hill, Panama).

*Nonnula frontalis* SCLATER, Proc. Zool. Soc. Lond., 1855, 196 (Rio Napo, e. Ecuador); Cat. Am. Birds, 1862, 274 (Bogotá, Colombia); Mon. Jacam. and Puff-birds, 1882, 139; Cat. Birds Brit. Mus., xix, 1891, 201 (Panama; int. Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 519.—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 17 (Loma del Leon, Panama).

*N[onnula] frontalis* CABANIS and HEINE, Mus. Hein., iv, heft 1, 1863, 129.

*[Nonnula] frontalis* Sclater and Salvin, Nom. Av. Neotr., 1873, 106.—SHARPE, Hand-list, ii, 1900, 199.

#### Suborder ANISODACTYLÆ.

#### ANISODACTYLE CORACIFORMES.

- < *Angulirostres* ILLIGER, Prodr. Orn., 1811, 208 (=Halcyones+Meropes).
- >< *Brevilingues* MERREM, Abhandl. Berlin Acad., 1812–13 (1816), p. 244 (=Halcyones+Upupæ).
- < *Alcyones* TEMMINCK, Man. d'Orn., 2d ed., 1820, 418 (=Halcyones+Meropes).
- < *Tantali terrestres* WAGLER, Natürl. Syst., Amphib., 1830, 81 (=Upupæ+Bucerotes+Halcyones).
- < *Lipoglossæ* NITZSCH, Syst. Pterylog., 1840, 146 (=Bucerotes+Upupæ+Halcyones).
- < *Anisodactyli* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 156 (=Halcyones+Momoti).
- < *Coccyges anisodactylæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. vi, 102 (excludes Meropes and Bucerotes).<sup>b</sup>
- > *Anisodactylæ* SCLATER, Ibis, 1880, 401 (includes Colii, Upupæ, Coraciæ, and Caprimulgi).
- = *Anisodactylæ* RIDGWAY, Bull. U. S. Nat. Mus., no. 50 (Birds North and Mid. Am.), pt. iv, 1911, 297.
- > *Insessores* (not of Vigors, 1823) REICHENOW, Vög. Zool. Gart., 1882, 129 (includes Upupæ, Coraciæ, and Podargidæ).
- = *Volucres Syndactylæ* SUNDEVALL, Met. Nat. Av. Disp. Tent., 1872, 94.
- > *Halcyoniformes* FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567 (includes Upupæ).
- = *Alcedinoidæ* STEJNEGER, Stand. Nat. Hist., iv., 1885, 395, in text.
- > *Halcyones* FORBES, Ibis, 1884, 119 (includes Upupæ and Colii).
- > *Aniso-syndactylæ* DUBOIS, Mém. Soc. Zool. France, iv, 1891, 115 (includes Coraciæ and Upupæ).
- > *Coraciæ* GADOW, Struct. and Classif. Birds, 1898, 36 (includes Coraciæ).—BEDDARD, Struct. and Classif. Birds, 1898, 204 (includes Coraciæ).

<sup>a</sup> Four specimens.

<sup>b</sup> The work cited dealing with American birds only, it is uncertain as to what forms the authors would have included in a world-wide scheme.



Synpelmous, anisodactyle or syndactyle Coraciiformes with palate desmognathous, and with the dorsal pteryla not forked between shoulders; myological formula AX or AXY; carotid arteries 1, 2, or none; flexor tendons usually of type Vb, sometimes (in *Bucerotes*) of type Va, or (*Halcyones*, part) type IX; hallux connected with flexor perforans digitorum, not with flexor hallucis.

## KEY TO THE SUPERFAMILIES OF ANISODACTYLÆ.

- a. Metasternum 2-notched (the notches shallow); gluteus primus muscle absent; spinal pteryla not defined on neck (no lateral cervical apteria); flexor tendons of type Va (as in Pamprodactylæ and Macrochires); intestinal convolutions of type VII (as in Upupæ); adult downs absent; base of remiges not overlapped by coverts; well-developed eyelashes; skeleton highly pneumatic; bill highly specialized (surmounted by a more or less elevated, usually hollow, accessory piece or "casque").....**Bucerotes** (extralimital).<sup>a</sup>
- aa. Metasternum 4-notched (the notches deep); gluteus primus muscle present; spinal pteryla well-defined on neck (lateral cervical apteria present); flexor tendons not of type Va (usually of type Vb); intestinal convolutions of type VI; adult downs present (absent in Momoti); base of remiges overlaid by coverts; no eyelashes; skeleton not highly pneumatic; bill not highly specialized.
- b. Two carotid arteries; no spinal apterium.
- c. Myological formula AX; basipterygoid processes and aftershaft absent.  
**Halcyones** (p. 403)
- cc. Myological formula AXY; basipterygoid processes and aftershaft present.
- d. Metasternal notches (at least the external pair) closed (converted into foramina); cæca absent; oil-gland nude; bill more or less decurved; tail more than three-fourths as long as wing, excessively graduated; tarsi stout, the acrotarsium distinctly scutellate.....**Momot** (p. 450).
- dd. Metasternal notches open; cæca present; oil-gland tufted; bill straight; tail less than three-fourths as long as wing, nearly truncate; tarsi slender, the acrotarsium non-scutellate ("booted").....**Todi** (p. 441).
- bb. Only one carotid artery (the left); a spinal apterium.  
**Meropes** (extralimital).<sup>b</sup>

## Superfamily HALCYONES.

## THE KINGFISHERS.

=*Alcedinidæ* BONAPARTE, Prodr. Syst. Orn., 1840, 6.—LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 16.

=*Alcyones* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, 209.

<sup>a</sup> = *Appendirostres* Blyth, Mag. Nat. Hist. (Charlesworth's), n. s., ii, 1838, (598?).  
> *Bucerotes* Fuerbringer, Unters. Morph. Syst. Vög., ii, 1888, 1567 (includes Upupæ). = *Bucerotes* Sceböhm, Classif. Birds, 1890, pp. vii, xi, 22; Sharpe, Rev. Classif. Birds, 1891, 80; Hand-list, ii, 1900, 63. = *Bucerotidæ* Stejneger, Stand. Nat. Hist., iv, 1885, 404; Fuerbringer, Unters. Morph. Syst. Vög., ii, 1888, and of most authors.

The *Bucerotes* comprise a single family, *Bucerotidæ* (Hornbills) peculiar to the Ethiopian and Indian regions and the Indo-Malayan and Austro-Malayan Subregions.

<sup>b</sup> = *Meropes* Fuerbringer, Unters. Morph. Syst. Vög., ii, 1888, 1567; Sharpe, Rev. Classif. Birds, 1891, 80; Hand-list, ii, 1900, 72.

The *Meropes* comprise a single family, *Meropidæ* (Bee-eaters), peculiar to the Ethiopian and Indian Regions and Indo-Malayan and Austro-Malayan Subregions, with one species reaching the southern Palæarctic Region and another in Australia.

= *Halcyones* FUEBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567.—SHARPE, Rev. Classif. Birds, 1891, 80; Hand-list, ii, 1900, 48.

= *Alcedines* BEDDARD, Struct. and Classif. Birds, 1898, 197.

Synpelmous anisodactyle Coraciiformes with myological formula AX, basipterygoid processes, vomer, cæca, and aftershaft absent, two carotid arteries, and without spinal apterium.

Palate desmognathous; nares holorhinal, impervious; cervical vertebræ 14-15; complete ribs, 3-4 pairs; metasternum 4-notched; spina externa sterni present, spina interna absent; furcula U-shaped; syrinx tracheo-bronchial; flexor tendons of type V or Vb, the hallux connected with the flexor perforans digitorum; intestinal convolutions of type VI; tensor patagii brevis muscle present, biceps slip absent; expansor secundariorum and accessory semitendinosus muscles either present or absent; feet anisodactyle, synpelmous, the outer (fourth) toe united to middle (third) toe for more than its basal half, the inner (second) toe united to the middle toe by its basal third, but inner toe sometimes wanting; soles of toes flattened; spinal pteryla well-defined on neck, not forked on upper back; ventral pteryla not only divided centrally, but also on each side of breast; oil-gland tufted; secondaries 11-14; primaries 11; rectrices usually 12 (10 in one genus only).

The Kingfishers are a well-marked group of Picarian birds, characterized by their long, compressed, and acute beak, small feet with soles much flattened and the fourth (outer) toe united to the third (middle) for more than half its length, and the second (inner) united to the third for its basal third. They differ from the Todies (Todidæ) in the absence of cæca, and from the Motmots (Momotidæ) in the absence of aftershfts to the feathers, besides in other respects. Among Old World families they are most nearly related to the Hornbills (Bucerotidæ) and Hoopoes (Upupidæ), especially the former, with which the Kingfishers agree closely in the shape of the syndactylous foot, in having the oil-gland tufted, in lacking aftershfts to the contour feathers, and in the absence of colic cæca—characters shared also by the Hoopoes except the first, the feet of the Upupidæ being almost typically Passerine in structure.

The Kingfishers, as their name implies, feed chiefly on small fishes, though some of the species, particularly those belonging to the subfamily Daceloninæ, are forest birds and subsist on reptiles and other forms of animal life. They nest in holes which they dig in banks, some of the forest-inhabiting species laying in cavities in trees. Their eggs are invariably pure white.

The family is very numerously represented in the eastern hemisphere, especially in the Malay Archipelago, and thence to New Guinea, where a great variety of generic types are found, many of them among the most beautiful of birds. As stated above, the group

is poorly represented in America, where occur only two genera with about eleven species and subspecies.

### Family **ALCEDINIDÆ**.

#### THE TRUE KINGFISHERS.

= *Ispidae* MERREM, Abhandl. Berlin Acad., 1812-13 (1816), p. 245.

> *Halcyonidæ* VIGORS, Zool. Journ., ii, Oct., 1825, 394 (includes *Galbula*, *Capito*?, and *Monasa*?).

< *Alcedininae* BONAPARTE, Saggio distr. An. Vert., 1831, 41 (genus *Alcedo* only).

= *Alcedininae* BONAPARTE, Prodr. Syst. Orn., 1840, 7; Consp. Av., i, 1850, 158.—CABANIS and HEINE, Mus. Hein., ii, 1860, 143.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1873, 95 (English translation, 1889, 175).

= *Alcedidæ* KAUP, Jardine's Contr. Orn., 1849, 119.

< *Alcedinidae* FUEBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1372, 1584, 1590 (excludes *Halcyoninae* as family *Halcyonidæ*!).

= *Alcedinidae* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 344.—BONAPARTE, Consp. Av., i, 1850, 153.—CABANIS and HEINE, Mus., Heine, ii, 1860, 143.—GRAY, Hand-List, i, 1869, 89.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 395, 401, in text.—SHARPE, Hand-List, ii, 1900, 48.

The characters of the Family *Alcedinidæ* are the same as those of the superfamily *Halcyones* (see p. 403), the opinion that only one family is comprised within the latter being so nearly universal that, so far as I am aware, Fuerbringer is the only exception.

The anatomy of the different generic types of the group has not been sufficiently studied to justify more than a provisional subdivision; but authors are pretty well agreed that two subfamilies are easily recognized from external characters alone, these being characterized as follows by Dr. R. Bowdler Sharpe, in volume xviii of the "Catalogue of Birds in the British Museum," p. 93:

- a. Bill long and slender, compressed, and perceptibly keeled; habits mainly piscivorous.....**Alcedininae**.
- b. Bill more or less depressed; culmen rounded or flattened, sometimes even grooved; habits mainly insectivorous or reptilivorous.....**Daceloninae**.<sup>a</sup>

Only the Subfamily *Alcedininae* is represented in America, by two genera. The following characters are drawn up from the American types and more nearly related Old World forms.

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<sup>a</sup>=*Alcedininae* Bonaparte, Saggio distr. An. Vert., 1831, 41 (genera *Halcyon*, *Dacelo*, *Melidora*, *Choucalcyon*, *Tanysiptera*, *Syma*, and *Ceyx*).=*Daceloninae* Bonaparte, Prodr. Syst. Orn., 1840, 7; Consp. Av., i, 1850, 153; Gray, Hand-list, i, 1869, 89; Gadow, Bronn's Thier-Reich, Vög., ii, 1893, 231; Sharpe, Cat. Birds Brit. Mus., xvii, 1892, 173; Hand-list, ii, 1900, 52.=*Halcyoninae* Cabanis, Wiegmann's Archiv für Naturg., i, 1847, 344; Cabanis and Heine, Mus. Hein., ii, 1860, 151.=*Halcyonidae* Fuerbringer, Unters. Morph. Syst. Vög., ii, 1888, 1567.

The *Halcyoninae* are confined to the Eastern Hemisphere, where they extend from Africa to Australia and Polynesia, being most numerously represented and most diversified in form in the Indo-Malayan and Austro-Malayan Subregions. According to Sharpe's "Hand-list" (ii, 1900, 52-63) the subfamily comprises 15 genera and 149 species, the *Alcedininae* containing only 5 genera and 51 species.



Head large, completely feathered, more or less crested, though sometimes only the feathers of the occiput and nape are slightly elongated; feathering of the anterior portion (all round) short and dense; no trace of antrorse bristles anywhere about base of bill. Bill long, strong, straight, much deeper than wide at base, subpyramidal in cross-section, usually longer than head; culmen not sharply if at all ridged, sometimes flattened basally, where, for a greater or less distance, constricted laterally by a distinct, though broad and shallow, lateral groove; gonys more or less convex, ascending terminally, rather prominent basally through contraction of the mandibular rami, the latter not more (usually less) than half as long as gonys; commissure straight for most of its length, but basally strongly sinuated from convexity of basal portion of maxillary tomium. Nostril narrow (slit-like), longitudinal or somewhat oblique, overhung by a more or less broad operculum. Wing moderate to rather short, with longest primaries always longer than longest secondaries; secondaries 12-15; primaries 11, but the eleventh (outermost) minute or rudimentary; tip of wing rather pointed, the seventh to ninth primaries longest, the tenth (apparent outermost) longer than fourth. Rectrices 12, the tail one-half to two-thirds as long as wing, slightly rounded. Feet relatively very small, the tarsus not longer (usually shorter) than inner anterior toe with claw, scutellate (sometimes in two irregular rows) in front, granulated behind; lower portion of tibia naked, sometimes for length of tarsus; hallux much shorter than inner toe, connected with inner anterior (second) toe, so as to form with it and the others a broad flattened sole, the surface of which is conspicuously granulated, the middle toe united to the outer for the whole of its first two phalanges, or more, to the inner for whole of the first phalanx; outer toe nearly as long as middle toe, the inner (without claw) reaching only to second articulation of middle toe; claws moderately large, rather sharp, the middle one somewhat expanded, but not pectinated, on inner edge; all the toes with the usual number of phalanges (2, 3, 4, 5).

In coloration none of the species have bright spectrum hues, so common in the subfamily Daceloninæ, though some have the upper parts of a rather dull metallic bronze-green. In all the American forms the sexes are more or less different in coloration.

KEY TO THE AMERICAN (AND RELATED OLD WORLD) GENERA OF *ALCEDINIDÆ*.

- a. Tail only half as long as wing; tarsus shorter than inner toe without claw; malar apex much nearer to eye than to nostril; coloration white and black.

*Ceryle* (extralimital).<sup>a</sup>

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<sup>a</sup> *Ceryle* Boie, Isis, 1828, 316. (Type, *Alcedo rudis* Linnæus.)

Africa to southern China. (Two species.)

- aa. Tail much more than half (three-fifths to two-thirds) as long as wing; tarsus not shorter than inner toe without claw; malar apex not nearer to eye than to nostril; coloration not exclusively black and white.
- b. Exposed culmen not more than one-third as long as wing; gonys less than half as long as mandibular rami; depth of bill at middle of nostril equal to one-third the distance from nostril to tip of maxilla; bill less tapering terminally, more obtuse at tip, the culmen more decurved terminally; tarsus not longer than inner toe without claw; coloration white, the upper parts barred with black and bluish gray.....**Megaceryle** (extralimital).<sup>a</sup>
- bb. Exposed culmen more than one-third as long as wing; gonys more than twice as long as mandibular rami; depth of bill at middle of nostrils less than one-third the distance from nostril to tip of maxilla; bill more tapering terminally, the tip acute, the culmen less decurved terminally; tarsus longer than inner toe without claw; coloration not mostly white.
- c. Exposed culmen less than half as long as wing; ninth primary longer than seventh; feathers of crown (as well as those of occiput and nape) elongated and narrow; upper parts mostly bluish gray (without metallic green).  
**Streptoceryle** (p. 407).
- cc. Exposed culmen more than half as long as wing; ninth primary shorter than seventh; feathers of crown and occiput short and blended (except in *C. amazona*); upper parts metallic bronze green.....**Chloroceryle** (p. 421).

### Genus STREPTOCERYLE Bonaparte.

*Ispida* (not of Brisson, 1760, Schaeffer, 1789, nor Rafinesque, 1815) SWAINSON, Classif. Birds, ii, 1837, 326. (Type, *Alcedo alcyon* Linnæus.)

*Streptoceryle* BONAPARTE, Ateneo Italiano, ii, 1854, 320 (Consp. Volucr. Anisod., 1854, 10). (Type, *Alcedo torquata* Linnæus.)

*Ichthyonomus* CABANIS and HEINE, Mus. Hein., ii, Jan., 1860, 150. (Type, *Alcedo maxima* Pallas.)

Medium sized to very large Alcedinidæ (length about 300–450 mm.) with the exposed culmen more than one-third but less than half as long as wing, gonys more than twice as long as mandibular rami, ninth primary longer than seventh, feathers of crown (as well as those of occiput and nape) elongated and narrow, and general color of upper parts bluish gray.

Bill longer than head, stout, compressed, its depth at middle of nostrils equal to about one-fourth the length of exposed culmen and much greater than its width at same point; culmen straight or very nearly so to near tip where very slightly decurved, forming a broad, sometimes flattened, ridge, the basal half, more or less, margined laterally by a well-defined but broad and shallow groove, from the nasal fossæ forward; gonys more than twice as long as mandibular rami, more or less prominent and convex (sometimes subangular) basally, nearly straight or faintly convex for rest of its length, ascending terminally; commissure straight, or very nearly so, for most of its length, but maxillary tomium strongly convex basally,

<sup>a</sup> *Megaceryle* Kaup, Verh. naturhist. Vereins Hessen, ii, 1848, 68. (Type, *Alcedo guttatus* Vigors (not of Boddaert)=*A. lugubris* Temminck.)

Eastern Asia. (Monotypic.)

the posterior (rietal) end ascending. Nostril exposed, narrow (slit-like), obliquely longitudinal, overhung by a distinct operculum. No trace of prefrontal, rietal, malar, nor mental bristles. Wing moderate or rather long, pointed, the longest primaries exceeding distal secondaries by at least half the length of exposed culmen; eighth and ninth primaries longest, the tenth (outermost) shorter than seventh, sometimes equal to sixth. Tail a little less to slightly more than three-fifths as long as wing, truncate or very slightly rounded. Tarsus as long as or longer than inner anterior toe without claw; lower portion of tibia naked for nearly the length of tarsus.

*Coloration and plumage.*—General color of upper parts bluish gray (more or less dark), usually interrupted by a white collar across hindneck, sometimes variegated by white spotting; tail (sometimes black) with incomplete white bars or spots arranged in transverse series; throat and foreneck (sometimes most of under parts of body) white; a jugular band of bluish gray (sometimes broken by white spotting); in most species, under parts of body cinnamon-rufous. Feathers of crown, occiput, and nape narrow and elongated, forming a conspicuous crest when erected.

*Range.*—North and South America and Africa. (About six species and subspecies.)<sup>a</sup>

KEY TO THE SPECIES AND SUBSPECIES OF STREPTOCERYLE.

a. Larger (wing 185–211); breast and abdomen cinnamon-rufous or rufous-chestnut. (*Streptoceryle torquata*.)

b. Outer webs of secondaries without distinct, if any, white spots or bars. (Northern Mexico to Uruguay, Paraguay, Argentina, and Ecuador.)

*Streptoceryle torquata torquata* (p. 409).

bb. Outer webs of secondaries conspicuously spotted or barred with white.

c. Under wing-coverts immaculate (white in male, light cinnamon-rufous in female); male with anal region and under tail-coverts slightly if at all barred or spotted, female with under tail-coverts immaculate. (Islands of Guadeloupe, Dominica, and Martinique, Lesser Antilles.)

*Streptoceryle torquata stictipennis* (p. 414).

cc. Under wing-coverts more or less spotted and streaked with dusky (white in male, mostly white in female); male with anal region and under tail-coverts heavily barred or spotted with bluish plumbeous, the female with these parts more or less spotted. (Tierra del Fuego north to Patagonia, Bolivia, and Peru.).....*Streptoceryle torquata stellata* (extralimital).<sup>b</sup>

<sup>a</sup> The only Old World species I have seen that seems to be strictly congeneric with the American species of this group is *S. maxima* (Pallas), a species which is strikingly similar in the details of form to *S. torquata* and not very dissimilar in coloration to *S. stellata*. Another African species probably congeneric with these is *S. sharpei* (Gould).

<sup>b</sup> *Alcedo stellata* Meyen, Nova Acta Leop. Carol., xvi, Suppl., 1834, 93, pl. 14 (banks of Rio Clado, Prov. San Fernando, Chile).—*M[egaceryle] stellata* Reichenbach, Handb., Alcedin., 1851, 24, pl. 409B, fig. 3487.—*[Ceryle] stellata* Lichtenstein, Nom. Mus. Berol., 1854, 67.—*Ceryle stellata* Pelzeln, Voy. "Novara," Vog., 1865, 50; Sharpe, Mon. Alced., 1870, 77.—*S[treptoceryle] stellata* Cabanis and Heine, Mus. Hein., ii, 1860, 151.—*Chloroceryle stellata* Sclater, Cat. Am. Birds, 1862, 264.—*[Ceryle torquata]* Subsp.



- aa. Smaller (wing 145-169.5); breast and abdomen white. (*Streptoceryle alcyon*.)
- b. Smaller (wing averaging 156.3 in male, 158.6 in female; tail 87.7 in male, 88.7 in female; exposed culmen 54.5 in male, 58.7 in female); wing-tip averaging relatively shorter. (Eastern North America, from Mackenzie to West Indies and Panama).....*Streptoceryle alcyon alcyon* (p. 415).
- bb. Larger (wing averaging 163.1 in male, 165.5 in female; tail 92.1 in male, 93.3 in female; exposed culmen 58.7 in male, 59.6 in female); wing-tip averaging relatively longer. (Western North America, from northern Alaska and Yukon Territory to western Mexico).....*Streptoceryle alcyon caurina* (p. 420).

### STREPTOCERYLE TORQUATA TORQUATA (Linnæus).

#### RINGED KINGFISHER.

*Adult male*.—Above bluish plumbeous, interrupted by a white collar across hindneck, the feathers usually with more or less distinct shaft streaks of black, especially those of the crest; secondaries narrowly tipped with white and (together with some of the coverts) with more or less concealed irregular white spotting; primaries dull black or slate-black, narrowly tipped with white (except outer quills), and often with spots of white on outer web, at least on inner quills; middle rectrices bluish plumbeous with a median narrow stripe of black, tipped with white and marked with larger or smaller transverse spots or irregular bars of white, which, however, rarely reach the edge of the webs; remaining rectrices black edged with bluish plumbeous (this nearly if not quite absent from the outermost), spotted with white along inner portion of outer web, the inner web crossed by much larger transverse spots or broad bars of white, which frequently become confluent along the edge, especially on proximal portion of the rectrices; a supraloral spot, spot on lower eyelid, chin, throat, sides of neck, anal region, under tail-coverts, axillars, under wing-coverts, and greater part of inner webs of remiges, white, the longer under tail-coverts and axillars sometimes more or less spotted or irregularly streaked with bluish plumbeous; sides of foreneck (immediately beneath the white subauricular area) bluish plumbeous; median portion of foreneck, chest, breast, abdomen, sides, and flanks, plain deep cinnamon-rufous, the feathers paler beneath surface; bill blackish paler basally, especially on mandible (greenish white in life)<sup>a</sup>; iris brown;<sup>a</sup> legs and feet dusky brown (olive-green in life);<sup>a</sup> length (skins), 360-424 (381); wing, 185-211

Footnote—Continued.

<sup>a</sup>. *Ceryle stellata* Sharpe, Cat. Birds Brit. Mus., xvii, 1892, 123.—*Alcedo stellaris* Kittlitz, Denkw. Reis. Russ. Am., i, 1858, 120, in text.

This form closely resembles *S. t. stictipennis* in coloration of the upper parts, some specimens of the two being precisely similar in this respect; but apparently always has under wing-coverts more or less spotted or streaked and the female has them largely white instead of wholly uniform light cinnamon-rufous; the posterior under parts are much more heavily barred or spotted, and the bill much smaller.

<sup>a</sup>F. Sumichrast, manuscript.

(196.2); tail, 110–129 (121.1); exposed culmen, 75–94 (84.3); tarsus, 14.5–17 (15.4); middle toe, 19.5–23.5 (21.3).<sup>a</sup>

*Adult female*.—Similar to the adult male, but anal region, under tail-coverts, axillars, and under wing-coverts cinnamon-rufous (like abdomen, etc.); foreneck and chest bluish plumbeous, and a more or less distinct white band across upper breast; length (skins), 353–440 (384); wing, 185–210 (197.6); tail, 111.5–132 (121.3); exposed culmen, 76–91 (82.7); tarsus, 14.5–16.5 (15.4); middle toe, 19.5–23.5 (21.6).<sup>b</sup>

*Young male*.—Similar to the adult female but cinnamon-rufous of under parts decidedly paler, jugular area dull gray washed with cinnamon (or the feathers margined or tipped with cinnamon), white pectoral band indistinct or obsolete, under wing-coverts partly white,

<sup>a</sup> Forty-three specimens.

<sup>b</sup> Thirty-six specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Eight adult males from Tamaulipas.....	202.5	124.4	82.9	15.2	22.2
Two adult males from Vera Cruz.....	197.5	120.7	80.2	16	22
Two adult males from Sinaloa.....	189	114.5	84.5	15	21
Two adult males from Oaxaca.....	189.5	117.5	78.5	16.5	21.5
One adult male from Chiapas.....	194	116	81	16	22
One adult male from southern Honduras.....	198.8	119.7	87.2	15.4	21.8
Four adult males from Costa Rica.....	193.2	117.2	82	15.3	21.5
Seven adult males from Panama.....	194.5	116.4	82.6	15.4	21.2
Seven adult males from Colombia.....	196.9	117.9	83.6	15.1	20.1
One adult male from Trinidad.....	187	111.5	77	15	21
Three adult males, from British Guiana (2) and Surinam (1).....	194.7	119.3	82.7	15.3	21.5
One adult male from southeast Brazil (Rio de Janeiro).....	203	122	83	16	22.5
One adult male from Uruguay.....	200	120	84	15	21
Two adult males from Paraguay.....	206	123.7	83.2	16.2	19.7
One adult male from Bolivia.....	192.5	119	75	15.5	20
FEMALES.					
Five adult females from Tamaulipas.....	202	122	89.7	15.9	22.2
One adult female from Nuevo Leon.....	208	132	89	15.5	21
One adult female from Vera Cruz.....	198.5	123	84	16	23.5
Four adult females from Oaxaca.....	196	120.7	81.5	15.1	21.9
One adult female from Guatemala.....	207	123	85	15	21
One adult female from Salvador.....	206	127	89	15.5	22
Two adult females from Nicaragua.....	195.7	120.5	82.7	15.2	22
Three adult females from Costa Rica.....	189.8	117.3	79.3	15.3	21.3
Four adult females from Panama.....	198.1	120.2	84.5	15.5	22.4
Six adult females from Colombia.....	193.7	119.9	78.4	15.6	21.3
Two adult females from Lower Amazon (Santarem).....	195.2	117.5	79.5	15.2	21.7
One adult female from eastern Brazil (Pernambuco).....	193	116.5	75	14	18.5
One adult female from Uruguay.....	193	119.5	76.5	15.5	19.5
One adult female from Paraguay.....	200.5	132	87	15	21
One adult female from Argentina.....	202	121	84	15	22.5
One adult female from Bolivia.....	200.5	128	82	15	21

black streaks on pileum much broader, and wing-coverts (sometimes feathers of other upper parts also) with distinct (sometimes quite broad) mesial cuneate streaks of black.

*Young female*.—Similar to the young male (as described) but under wing-coverts wholly cinnamon-rufous, and white pectoral band more distinct.

Mexico, in States of Tamaulipas (Tampico; Alta Mira; Rio Martinez; Rio de la Cruz; Rio Corona), Nuevo León (Rio de Bo; Rio Grande), Sinaloa (Mazatlán), Hidalgo (Reál del Monte), Vera Cruz (Jalapa; Tlalcotalpám; Gutierrez Zamora; Paso de la Milpa; Vega de Aletorre; Santa Ana; Rio Rancho Nuevo), Oaxaca (Chihuitán; Santa Efigénia; Tuxtepec; Rincón Antonio), Tabasco (Teapa), and Chiapas (Huehuetán; Tonalá) and Territory of Tepic (San Blas), and southward through Guatemala (Choctúm; Petén; Rio Dulce; Lanquín; Huamachál; San José; Los Amates), Salvadór, British Honduras (Belize; Cayo); Honduras (Omoa; San Pedro; Rio Segóvia), Nicaragua (Managua; Ometepe; Sucuyá; San Juan del Sur; Momotombo; Rio Escondido), Costa Rica (Rio Frio; Orosi; Navarro; Jiménez; Guácimo; Agua Caliente; La Palma de Nicoya; Barranca de Punta Arenas; Liberia; Pozo Azul de Pirrís; Paso Reál; Pozo del Rio Grande; Bolsón) to Panamá (Lion Hill; Divala, and Boquerón Chiriquí; Rio Trinidad; San Miguel Island), and southward over greater part of South America, from Colombia to Trinidad, Guianas, Paraguay (Asunción; Tayru; Fuerte Olimpo), Uruguay (Concepción; Santa Elena), Argentina (Buenos Aires; Entre Rios; Lomas de Zamora; Córdova; Estancia Espartilla; Santa Ana; Lules; Orán, Salta; Tucumán; Mocoví, Chaco; Barracas al Sud; lower Rio Pilcomayo), Bolivia (Reyes; Caiza; Santa Cruz de la Sierra, Chiquitos), and Peru (Lima; Rio Rimac; Rio Cadena, Cuzco).

[*Alcedo*] *torquata* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 180 (Mexico, based on *Le Martin-pescheur hupé du Mexique* Brisson, Orn., iv, 518, pl. 41, fig. 1).—GMELIN, Syst. Nat., i, pt. 1, 1788, 452.—LATHAM, Index Orn., i, 1790, 256.

*Alcedo torquata* TEMMINCK, Cat. Syst., 1807, 69.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 399, part ("Louisiana").—LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, 1; Journ. für Orn., 1863, 55 (Mexico).—LESSON, Traité d'Orn., 1831, 242.—CABANIS, in Schomburgk's Reis. Brit. Guiana. iii, 1848, 703.—SCHLEGEL, Mus. Pays-Bas, iii, no. 17, 1863, 4, part (Brazil; Caracas, Venezuela; Surinam; no. 39 (Rev. Crit.), 1874, 1.

*Ceryle torquata* SCLATER, Proc. Zool. Soc. Lond., 1856, 139 (David, Panama).

*Ceryle torquata* BONAPARTE, Proc. Zool. Soc. Lond., 1837, 108 (Mexico).—HARTLAUB, Index Azara's Apunt., 1847, 26.—GRAY, List Fissirostr. Birds Brit. Mus., 1848, 61.—CASSIN, Cat. Halcyonidæ Mus. Phila. Acad., 1852, 2; Proc. Ac. Nat. Sci. Phila., 1860, 133.—SCLATER, Proc. Zool. Soc. Lond., 1857, 202 (Jalapa, Vera Cruz); 1860, 284 (Babahoyo, w. Ecuador).—PELZELN, Sitz. Ak. Wien, 1856, 514; Orn. Bras., i, Abth., 1868, 23; iv. Abth., 1870, 404.—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Omoa, Honduras; Peten, Guatemala).—SCLATER and SALVIN, Ibis, 1859, 131 (Rio Dulce, Guatemala); Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill, Panama); 1866, 191 (Lower Ucayali,



c. Peru; descr. eggs); 1867, 280 (Bluefields R., Nicaragua), 581 (Tocantins and Mexiana I., Brazil), 978 (Pebas, e. Peru); 1870, 837 (Honduras); 1873, 292 (Rio Ucayali and Huallaga Valley, e. Peru; habits; descr. nest and eggs); 1879, 534 (Nichi, Antioquia, Colombia), 632 (Santa Cruz de la Sierra, Chiquitos, Bolivia).—LÉOTAUD, Ois. Trinidad, 1866, 106.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama); ix, 1868, 117 (Costa Rica); Mem. Bost. Soc. N. H., ii, 1874, 289 (Mazatlan, Sinaloa; habits); Bull. U. S. Nat. Mus., no. 4, 1876, 30 (Chihuitan and Santa Efigenia, Oaxaca).—SHARPE, Mon. Alced., 1870, 73, pl. 22; Cat. Birds Brit. Mus., xvii, 1892, 131 (Nuevo Leon; Tampico, Tamaulipas; Real del Monte, Hidalgo; etc.).—FRANTZIUS, Journ. für Orn., 1869, 311 (Agua Caliente, Orosi, and Navarro, Costa Rica).—WYATT, Ibis, 1871, 373 (Lake Paturia and Rio Magdalena, Colombia).—LEE, Ibis, 1873, 133 (Entre Rios, Argentina).—BERLEPSCH, Journ. für Orn., 1873, 269 (Santa Catarina, s. Brazil; synonymy, crit., etc.); 1884, 318 (Lake Paturia, Colombia); 1887, 22 (Lambare, Paraguay), 121 (Paraguay); Ibis, 1884, 435 (Rio Apure, Venezuela; crit.); 1885, 118 (Babahoyo, w. Ecuador); Novit. Zool., xv, 1908, 275 (Cayenne).—ALLEN, Bull. Essex Inst., viii, 1876, 80 (Santarem, Brazil); Bull. Am. Mus. N. H., v, 1893, 125 (Chapada, Matto-grosso, Brazil); xiii, 1900, 136 (Bonda, Santa Marta, Colombia).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1877, 328; Orn. du Pérou, iii, 1886, 100.—SALVIN and GODMAN, Ibis, 1880, 174 (Rio Manzanares, Santa Marta, Colombia); Biol. Centr.-Am., ii, 1895, 474 (Rio Grande, Nuevo Leon; Jalapa, Paso de la Milpa, Vega de Alatorre, Santa Ana, and Rio Rancho Nuevo, Vera Cruz; San Blas, Tepic; Tonalá, Chiapas; Teapa, Tabasco; Belize R. and Cayo, Brit. Honduras; Rio Dulce, Lanquin, Choctum, Huamuchal, San José, and Peten, Guatemala; Omoa, San Pedro, etc., Honduras; Momotombo, etc., Nicaragua; Navarro, etc., Costa Rica; Chepo, etc., Panama; South America, except Patagonia and Pacific coast of Chile and Peru).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 399 (La Palma de Nicoya, Costa Rica); vi, 1883, 375, 387, 394 (San Juan del Sur, Sucuyá, and Omotepe, Nicaragua).—SALVIN, Ibis, 1883, 426 (Rio Rimac, Peru); 1886, 60 (Cama-cusa, Merume Mts., and Atapurau R., Brit. Guiana).—BARROWS, Auk, i, 1884, 26 (Concepción, Uruguay).—RIDGWAY, Proc. U. S. Nat. Mus., vii, 1884, 177 (Sabanilla, Colombia); x, 1887, 591 (Rio Segovia, s. Honduras).—BERLEPSCH and IHERING, Zeitschr. Orn., 1885, 160 (Taquara, etc., Rio Grande do Sul, s. Brazil).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Liberia and Jiménez, Costa Rica; Panama).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 160 (Paso de la Milpa, Vera Cruz).—WITHINGTON, Ibis, 1888, 468 (Lomas de Zamora, Argentina).—SCLATER and HUDSON, Argentine Orn., ii, 1889, 26.—FRENZEL, Journ. für Orn., 1891, 117 (Cordoba, Argentina).—RIKER and CHAPMAN, Auk, viii, 1891, 158 (Santarem, Brazil).—KERR, Ibis, 1892, 138 (Lower Pilcomayo, Argentina; habits); 1901, 228 (Villa Concepción, Paraguay).—HOLLAND, Ibis, 1892, 202 (Estancia Espartilla, Argentina).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1892, 399 (Lima and Rio Rimac, Peru); Ornith., 1906, 122 (Rio Cadena, Cuzco, Peru).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 510 (Rio Frio, Costa Rica; Rio Escondido, Nicaragua; habits); xviii, 1895, 629 (Alta Mira, Tamaulipas).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 62 (Trinidad).—STONE, Auk, xi, 1894, 177 (Laredo, Texas, 1 spec., June 2, 1888).—APLIN, Ibis, 1894, 190 (Santa Elena, Uruguay; habits).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 40.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xii, 1895, 164; Check List, 2d ed., 1895, no. 390.1; 3rd ed., 1910, 184.—KOENIGSWALD, Journ. für Orn., 1896, 376 (Sao Paulo, s. Brazil).—SALVADORI, Boll. Mus. Zool., etc., Torino, xii,

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- [*Ceryle*] *torquata* BONAPARTE, Consp. Av., i, 1850, 160.—GRAY, Hand-list, i, 1869, 97, no. 1186.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—SHARPE, Hand-list, ii, 1900, 50.
- [*Ceryle*] *torquata* GRAY, Gen. Birds, i, 1847, 79.—RIDGWAY, Man. N. Am. Birds, 1887, 279.
- Ceryle torquata torquata* HELLMAYR, Novit. Zool., xiv, no. 2, Nov., 1907, 402 (Borba, Rio Madeira, Brazil).—HARTERT and VENTURI, Novit. Zool., xvi, 1909, 232 (Chaco, Argentina; descr. nest and eggs).
- [*Megaceryle*] *torquata* REICHENBACH, Handb., Alced., 1851, 24, pl. 411, fig. 3106.
- Megaceryle torquata* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 404; Journ. für Orn., 1860, 244 (Paraná, Argentina); La Plata Reis., ii, 1861, 446.
- [*Streptoceryle*] *torquata* BONAPARTE, Ateneo Italiano, ii, 1854, 320 (Consp. Volucr. Anisod., 1854, 10).—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 164 (Guiana; Brazil).
- [*Streptoceryle*] *torquata* CABANIS and HEINE, Mus. Hein., ii, 1860, 150 (Guiana; Brazil).
- Streptoceryle torquata* CABANIS, Journ. für Orn., 1862, 161 (Costa Rica); 1874, 90 (Brazil).
- Chloroceryle torquata* SCLATER, Cat. Am. Birds, 1862, 264 (Pará; Cayenne).
- Alcedo cyanea* VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 401 (Paraguay; based on *Martin-pescador celeste* Azara, Apunt., no. 417; =female).—MAXIMILIAN, Beitr. Naturg. Bras., iv, 1832, 5.
- Ceryle cyanea* REINHARDT, Ved. Med. Nat. Förh., 1870, 123 (Brazil).
- Alcedo cinerea* BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 286 (Paraguay; based on *Martin-pescador celeste oscuro* Azara, Apunt., no. 418; =young male).
- Megaceryle caesia* REICHENBACH, Handb., Alced., 1851, 24, pl. 411, fig. 3107 (Guiana; coll. Dresden Mus.).—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 405, footnote.

## STREPTOCERYLE TORQUATA STICTIPENNIS (Lawrence).

## ANTILLEAN RINGED KINGFISHER.

Similar to *S. t. torquata* but with outer webs of secondaries conspicuously spotted with white (the whole upper parts sometimes similarly marked).<sup>a</sup>

*Adult male*.—Length (skin, 392;<sup>b</sup> wing, 193.5–201 (197.4); tail, 121.5–125 (123.1); exposed culmen, 79.5–81 (80.5); tarsus, 13.5–15 (14.5); middle toe, 19–20.5 (20).<sup>c</sup>

*Adult female*.—Wing, 200–202.5 (201.2); tail, 120–123.5 (121.7); exposed culmen, 83–86 (84.5); tarsus, 14–16 (15); middle toe, 22–22.5 (22.2).<sup>d</sup>

Lesser Antilles (islands of Guadeloupe and Dominica; Martinique?).

(?) *Alcedo torquata* (not of Linnæus) VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 399, part ("Antilles").—SCHLEGEL, Mus. Pays-Bas, iii, no. 17, 1863, 4, part ("Haiti").

*Ceryle torquata* LAWRENCE, Proc. U. S. Nat. Mus., i, 1879, 459, 487 (Guadeloupe, Lesser Antilles).

[*Ceryle*] *torquata* CORY, List Birds West Ind., 1885, 19 (Guadeloupe).

*Ceryle stictipennis* LAWRENCE, Proc. U. S. Nat. Mus., viii, no. 39, Nov. 3, 1885, 623 (Guadeloupe, Lesser Antilles; coll. G. N. Lawrence).—CORY, Auk, iii, 1886, 367 (Guadeloupe); iv, 1887, 96 (Martinique); Birds West Ind., 1889, 162 (Guadeloupe).

<sup>a</sup> There is much individual variation in the extent of the barring or spotting on the upper parts, some specimens being as conspicuously marked as extreme examples of *S. t. stellata* while others can be distinguished from *S. t. torquata* only by the white bars or spots on outer webs of the secondaries. One specimen (No. 28692, coll. Mus. Comp. Zool.), said to be from Martinique (it was first labeled as from St. Christopher!) lacks even the white markings on outer webs of the secondaries, and is, so far as I can see, in every way indistinguishable from typical *S. t. torquata*. Possibly it is not from either of the islands named, but from some part of the continent. As in the case of *S. t. stellata*, the cinnamon-rufous of the under parts appears to be darker, more castaneous, in *M. t. stictipennis* than in *S. t. torquata*.

<sup>b</sup> One specimen.

<sup>c</sup> Four specimens.

<sup>d</sup> Two specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Three adult males from Guadeloupe.....	197.3	129.2	80.3	14.3	19.8
One adult male from Dominica.....	197.5	123	81	15	20.5
One adult male of <i>M. t. stellata</i> .....	197	118.5	71	-----	-----
Forty-three adult males of <i>M. t. torquata</i> .....	196.2	121.1	84.3	15.4	21.3
FEMALES.					
One adult female from Guadeloupe.....	202.5	123.5	86	14	22.5
One adult female said to be from Martinique.....	200	120	83	16	22
One adult female of <i>M. t. stellata</i> .....	189.5	114.5	60	-----	-----
Thirty-six adult females of <i>M. t. torquata</i> .....	197.6	121.3	82.7	15.4	21.6



*Ceryle torquata stictipennis* CORY, Cat. West Ind. Birds, 1892, 11, 103, 133 (Guadeloupe).

[*Ceryle torquata*] Subsp.  $\beta$ . *Ceryle stictipennis* SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 124.

### STREPTOCERYLE ALCYON ALCYON (Linnæus).

#### BELTED KINGFISHER.

*Adult male*.—Above, including sides of head, clear bluish gray (nearly plumbeous), interrupted by a white collar across hindneck; feathers of pileum (especially those of crest) with a median streak (more or less broad) of black, those of back, wings, etc., with very slender black shaft-streaks; wing-coverts and secondaries usually with a few minute irregular white markings, the latter with portion of outer web next to shaft and most of inner web black; alula, primary coverts, and primaries slate-black, the first edged with bluish gray, the second minutely tipped with white, the primaries with basal half, more or less, spotted with white, the inner ones, together with the distal secondaries, rather narrowly tipped with white; middle pair of rectrices bluish gray with a median streak of black (this sometimes confined to shaft), the latter usually margined on each side by a greater or less number of small white spots; remaining rectrices slate-black or blackish slate, the outer web (except of lateral pair) broadly edged with bluish gray, the inner black portion spotted with white, the inner webs barred with white; outermost rectrix similar but without distinct if any bluish gray edging, the white spots reaching to outer margin; a conspicuous supraloral spot of white, and another but smaller white spot immediately beneath eye; posterior portion of malar region, sides of neck, chin, throat, and foreneck immaculate white, the anterior portion of the malar region deep bluish gray or broadly streaked with the same; a broad band of bluish gray across chest; rest of under parts white, the sides and flanks mostly bluish gray (usually intermixed or flecked with white); axillars, under wing-coverts, and greater part of basal half (more or less) of inner webs of primaries, immaculate white; inner webs of secondaries white basally, this sometimes broken into spots on distal portion; bill black, sometimes paler (grayish) basally, especially on mandible; iris dark brown; legs and feet livid slate color (in life); length (skins), 276–310 (295); wing, 145–161 (156.3); tail 82–93.5 (87.7); exposed culmen, 53–61.5 (54.5); tarsus, 11–12 (11.9); middle toe, 14.5–17 (15.6).<sup>a</sup>

*Adult female*.—Similar to the adult male but with a band (sometimes incomplete or interrupted) across lower breast, together with sides, flanks, and axillars, cinnamon-rufous, the innermost under wing-coverts sometimes tinged or suffused with the same; length (skins),

<sup>a</sup> Nineteen specimens.

270–320 (312); wing, 150–165 (158.6); tail, 81–96 (88.7); exposed culmen, 54.5–63 (58.7); tarsus, 10–12 (11); middle toe, 14.5–16 (15.6).<sup>a</sup>

*Young male*.—Similar to the adult male, but jugular band more or less tinged or intermixed with cinnamon or cinnamon-brown.

*Young female*.—Similar to the adult female but jugular band largely (often mostly) cinnamon-rufous, or much intermixed with that color, instead of mostly or wholly bluish gray.

Eastern North America; north to Mackenzie (Slave River; Great Slave Lake; Mackenzie and Anderson Rivers to Arctic Ocean), Keewatin (Ft. Churchill), northern Quebec, Labrador (Northwest, Little Natashquan and Mingan Rivers), Newfoundland, etc.; west to base of Rocky Mts. and (during migration) to Ft. Clarke (western Texas); breeding southward to Gulf coast and southern Florida; in winter southward throughout West Indies, to Bermuda, and through eastern Mexico, in States of Tamaulipas, Vera Cruz (Jalapa; Orizaba), Oaxaca (Santa Efigénia) and Yucatan (Progreso; Shkolak; Cozumél Island), and through Guatemala (Golfo Dulce; San Gerónimo; Dueñas; San José; Huamuchál; Santa Ana Mixtán; Lake Atitlán),

<sup>a</sup> Twenty-eight specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
One adult male from Mackenzie (Slave R.).....	158.5	89	61.5	11	15
One adult male from Pennsylvania.....	160.5	85.5	59	12	15.5
One adult male from District of Columbia.....	159	82	57	11	16
One adult male from North Carolina.....	155	88.5	55	11.5	16
Two adult males from Florida.....	155.5	86.7	60.2	11	14.7
One adult male from Minnesota.....	155.5	86	59	11.5	15
One adult male from e. Nebraska.....	154.5	89	55	11	15.5
One adult male from Ft. Clark, Texas.....	154	85	59	12	15
One adult male from Vera Cruz.....	159	85.5	53	11	15
One adult male from Salvador.....	159.5	89	58.5	11	16.5
One adult male from St. Thomas, Greater Antilles.....	156.7	86.7	56.2	11.2	14.7
One adult male from Grenada.....	154.7	87.5	58.2	11.2	15.7
One adult male from St. Andrews.....	157	88.5	56	12	16
One adult male from Barbuda.....	161	93.5	56	12	16
One adult male from St. Christopher.....	.....	88	59	12	16
One adult male from Guadeloupe.....	145	87	56	11	16
One adult male from Santa Lucia.....	161	90	59	11.5	17
One adult male from n. w. Alaska (Kowak R.) ( <i>S. a. caurina</i> )..	164	91.5	55	11	16
Two adult males from coast of s. Alaska ( <i>S. a. caurina</i> ).....	164.2	89.5	58.2	11.2	15
One adult male from coast British Columbia ( <i>S. a. caurina</i> )....	166.5	91.5	62	11	15
Four adult males from California ( <i>S. a. caurina</i> ).....	162.2	92.1	60.2	11.5	16
One adult male from Nevada ( <i>S. a. caurina</i> ).....	164	94	57.5	11.5	15.5
One adult male from Montana ( <i>S. a. caurina</i> ).....	160	91	56.5	11	15.5
One adult male from Colorado ( <i>S. a. caurina</i> ).....	164.5	92.5	63	12	16.5
One adult male from Sonora ( <i>S. a. caurina</i> ).....	163	90	58.5	11.5	15
Two adult males from Chihuahua ( <i>S. a. caurina</i> ).....	162	95.2	58.7	11.5	15.5

Salvadór (La Libertád), British Honduras (near Manatee Lagoon; Belize), Honduras (Omoa; Ruatán Island), Nicaragua (Chontales; Omotepe; San Juan del Sur), Costa Rica (Cartago; Navarro de Cartago; Agua Caliente; Orosi; Rio Frio), and Panamá (Lion Hill) to coast of northern Colombia (Santa Marta), Trinidad, and Los Testigos Islands, near Trinidad. Recorded from practically all the West India Islands, from the Bahamas to Grenada; said to be resident in some (even Grenada), but this is doubtful. Accidental in British Islands and Azores.

[*Alcedo*] *alcyon* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 115 (based on *The Kingfisher* Catesby, Nat. Hist. Carolina, i, 69, pl. 69; *The American Kingfisher* Edwards, Nat. Hist. Birds, iii, 115, pl. 115).—GMELIN, Syst. Nat., i, pt. 1, 1788, 451.—LATHAM, Index Orn., i, 1790, 257.—D'HAMONVILLE, Ois. Eur., 1876, 12 (Ireland; accidental).

*Alcedo alcyon* TEMMINCK, Cat. Syst., 1807, 69.—WILSON, Am. Orn., iii, 1811, 59, pl. 23, fig. 1.—VIEILLIOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 406.—AUDUBON, Orn. Biog., i, 1831, 394, pl. 77; v, 1839, 548, part; Synopsis, 1839, 173; Birds

Footnote—Continued.

Locality.	Wing.	Tall.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES—continued.					
One adult male from Durango ( <i>S. a. caurina</i> ).....	164	93.5	55.5	12.5	15
One adult male from Sinaloa ( <i>S. a. caurina</i> ).....	160.5	93.5	64	11.5	13.5
Two adult males from s. Lower California ( <i>S. a. caurina</i> ).....	164	91.5	59.5	11.5	16
FEMALES.					
Two adult females from Mackenzie.....	156	88.7	57.7	11	15.5
Six adult females from Rhode Island (1), New York (1), and District of Columbia (4).....	159.3	88.7	59	10.7	15.6
Two adult females from Ohio and Illinois.....	159.5	88.2	55.2	10.1	15
One adult female from Ft. Clark, Texas (December).....	155	88	61	11.5	16
Four adult females from South Carolina (2) and Florida (2)....	160.4	90.6	57.7	11.2	15.2
One adult female from Bahamas (Eleuthera I.).....	160.5	91	63	11	16
Two adult females from Cuba.....	158	84.7	58.7	11	15.7
Two adult females from Jamaica.....	158.5	86	58.2	11.5	15.2
One adult female from Porto Rico.....	160	89	55	11.5	16
Four adult females from Santa Lucia.....	158.2	89	59	11	15.7
One adult female from St. Christopher.....	156.5	94.5	57	10.5	16
One adult female from British Honduras.....	163.5	92	59.5	11	16
One adult female from Guatemala.....	150	83	59.5	10.5	15
Three adult females from n. Alaska (2) and Yukon (1) ( <i>S. a.</i> <i>caurina</i> ).....	166.2	90.2	58.5	11.2	15.8
Two adult females from coast of s. Alaska ( <i>S. a. caurina</i> ).....	167	97.5	57.7	11.5	16.5
Two adult females from coast of British Columbia ( <i>S. a. caurina</i> )	167.5	96.5	57	11.2	16.5
One adult female from coast of Washington ( <i>S. a. caurina</i> ).....	165.5	93	60	11	16
Two adult females from California ( <i>S. a. caurina</i> ).....	163.2	91.5	58.5	11	16.5
One adult female from n. Lower California ( <i>S. a. caurina</i> ).....	164	91.5	58	11	17
Two adult females from s. Lower California ( <i>S. a. caurina</i> ).....	161.5	92.5	61.5	11.7	16.2
One adult female from Arizona ( <i>S. a. caurina</i> ).....	167.5	93	71	11	16
One adult female from Montana ( <i>S. a. caurina</i> ).....	169	95	59.5	12	16



- Am., Oct. ed., iv, 1842, 205, pl. 255.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 339.—JARDINE, ed. Wilson's Am. Orn., i, 1832, 348, pl. 23, fig. 1.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 594.—D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Ois., 1839, 130.—MARTENS, Journ. für Orn., 1859, 215 (Bermuda).—WILLIS, An. Rep. Smithson. Inst., 1859, 287 (Bermuda).—SCHLEGEL, Mus. Pays-Bas, iii, no. 17; 1863, 4; no. 39 (Rev. Crit.), 1874, 2.—BRYANT Proc. Bost. Soc. N. H., x, 1866, 254 (Porto Rico); xi, 1867, 95 (Santo Domingo); Journ. für Orn., 1866, 188 (Porto Rico).—SUNDEVALL, Oefv. k. Vet. Ak. Förh., 1869, 585 (St. Bartholomew), 600 (Porto Rico).—GUNDLACH, Journ. für Orn., 1871, 270 (Cuba; crit.).
- A[leedo] alcyon* MAXIMILIAN, Journ. für Orn., 1858, 102 (Fox River, Indiana).
- C[eryle] alcyon* GRAY, Gen. Birds, i, 1847, 82.—NEWTON (A. and E.), Handb. Jamaica, 1881, 109.—COUES, Key N. Am. Birds, 2d ed., 1884, 470, part.—RIDGWAY, Man. N. Am. Birds, 1887, 279, part.
- Ceryle alcyon* BONAPARTE, Geog. and Comp. List, 1838, 10.—GOSSE, Birds Jamaica, 1847, 81.—JARDINE, Contr. Orn., 1848, 82 (Bermuda, Sept.-June).—GRAY, List Fissirosti. Birds Brit. Mus., 1848, 62.—HURDIS, Jardine's Contr. Orn., 1850, 7 (Bermuda).—CASSIN, Cat. Halcyon. Mus. Phila. Acad., 1852, 2.—CABANIS, Journ. für Orn., 1856, 101 (Cuba).—YARRELL, Hist. Brit. Birds, 3rd ed., 1856, 236.—SALLÉ, Proc. Zool. Soc. Lond., 1857, 233 (Santo Domingo).—BREWER, N. Am. Oology, i, 1857, 110, pl. 4, fig. 52 (egg); Proc. Bost. Soc. N. H., viii, 1860, 306 (Cuba).—BAIRD, Rep. Pacific R. R. Surv. ix, 1858, 158, part; Cat. N. Am. Birds, 1859, no. 117, part.—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Omoa, Honduras).—NEWTON (A. and E.), Ibis, 1859, 67 (St. Croix; habits).—BRYANT, Proc. Bost. Soc. N. H., vii, 1859, 108 (Bahamas).—SCLATER and SALVIN, Ibis, 1859, 131 (Golfo Dulce, Guatemala and Belize, British Honduras, in winter).—TAYLOR, Ibis, 1860, 116 (Honduras).—SCLATER, Proc. Zool. Soc. Lond., 1860, 252 (Vera Cruz); 1861, 77 (Jamaica); 1879, 765 (Montserrat).—MURRAY, Edinb. Philos. Journ., 1860, — (York Factory, Hudson Bay).—ALBRECHT, Journ. für Orn., 1861, 52 (Bahamas); 1862, 199 (Jamaica).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 318 (Lion Hill, Panama); ix, 1868, 118 (Navarro de Cartago and Cartago, Costa Rica); Bull. U. S. Nat. Mus., no. 4, 1876, 30 (Santa Efigenia, Oaxaca, Dec.); Proc. U. S. Nat. Mus., i, 1878, 62 (Dominica; resident?), 193 (St. Vincent, Oct.-Feb.), 272 (Grenada, "resident"); i, 1879, 359 (Martinique), 459 (Guadeloupe), 487 (Guadeloupe, Dominica, Martinique, St. Vincent, and Grenada, Lesser Antilles).—GUNDLACH, Repert. Fisco-Nat. Cuba, i, 1866, 292; Journ. für Orn., 1874, 145 (Cuba), 312 (Porto Rico); 1878, 160, 180 (Porto Rico); Anal. Soc. Esp. Hist. Nat., vii, 1878, 218 (Porto Rico); Orn. Cubana, ed. 1895, 134.—WOOD, Am. Nat., 1868, 379 (nesting habits).—SHARPE, Mon. Alced., 1868, 79, part, pl. 23; Cat. Birds Brit. Mus., xvii, 1892, 125, part.—FRANTZIUS, Journ. für Orn., 1869, 311 (Agua Caliente and Orosi, Costa Rica).—SALVIN, Ibis, 1872, 321 (Chontales, Nicaragua); 1889, 371 (Cozumel I., Yucatan; Ruatan I., Honduras).—HARTING, Handb. Brit. Birds, 1872, 124.—SEMPER, Proc. Zool. Soc. Lond., 1872, 652 (Santa Lucia).—COUES, Check List, 1873, no. 286, part; 2d ed., 1882, no. 423, part; Birds Northwest, 1874, 372, part; Bull. Nutt. Orn. Club, iii, 1878, 92 (feeding habits).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 392, part, pl. 45, fig. 6.—BOUCARD, Liste Ois. récol. Guat., 1878, 26 (Guatemala).—DAGLEISH, Bull. Nutt. Orn. Club, v, 1880, 73 (two records for British Islands).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 169 (Santa Lucia).—CORY, Birds Bahama Is., 1880, 115; Bull. Nutt. Orn. Club, vi, 1881, 154 (Haiti); Birds Haiti and San Dom., 1885, 103; Auk, iii, 1886, 368 (descr.; West Ind. references and range); iv, 1887, 181 (St. Andrews, Caribbean Sea); viii, 1891,

- 46 (Anguilla I.), 48 (St. Christopher; Guadeloupe), 294 (Cuba; New Providence, Bahamas), 295, 296, 298 (Berry Islands, Biminis, and Abaco, Bahamas); ix, 1892, 49 (Maragauna I., Bahamas); Birds West Ind., 1889, 163; Cat. West Ind. Birds, 1892, 103.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 190, part; Nom. N. Am. Birds, 1881, no. 382, part; Orn. Illinois, i, 1889, 390; Auk, viii, 1891, 339 (Green Cay, Bahamas, April).—GRISDALE, Ibis, 1882, 490 (Montserrat).—TRISTRAM, Ibis, 1884, 168 (Santo Domingo).—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 210 (Bermuda, Sept.-April).—NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 375, 394 (San Juan del Sur and Omotepe, Nicaragua).—HAYWARD, Auk, ii, 1885, 311 (eats coleoptera!).—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 242 (Northwest R., Labrador; Moose Factory).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 390, part; 2d ed., 1895, no. 390, part; 3rd ed., 1910, 183, part.—STAHL, Ornith., iii, 1887, 452 (Porto Rico).—WELLS, Proc. U. S. Nat. Mus., ix, 1887, 620 (Grenada; chiefly migrant, some resident).—FEILDEN, Ibis, 1889, 487 (Barbados; habits).—SCOTT, Auk, vi, 1889, 250 (Tarpon Springs, Florida, breeding); ix, 1892, 274 (Jamaica, Dec.-March).—CLARKE (W. E.), Auk, vii, 1890, 322 (Ft. Churchill, Keewatin).—NORTHROP, Auk, viii, 1891, 75 (Andros I., Bahamas).—MACFARLANE, Proc. U. S. Nat. Mus., xiv, 1891, 437 (Anderson R., Mackenzie).—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 300 (Cuba); vi, 1894, 62 (Trinidad).—VERRILL (G. E.), Trans. Conn. Ac. Sci., viii, 1892, 329 (Dominica).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 34, part, pl. 1, fig. 3 (egg).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 472, part (Orizaba, Jalapa, etc., Vera Cruz; Sta. Efigenia, Oaxaca; Progreso, Shkolak, etc., Yucatan; Belize, Brit. Honduras; San Gerónimo, Dueñas, San Jose, Huamuchal, and Santa Ana Mixtan, Guatemala; Omoa, etc., Honduras; Chontales, etc., Nicaragua; Rio Frio, etc., Costa Rica; Panama; Santa Marta, Colombia; Antilles).—CHERRIE, Contr. Orn. San Dom., 1896, 20 (Santo Domingo).—CHRISTY, Ibis, 1897, 332 (Rio Yuna, Santo Domingo).—BONHOTE, Ibis, 1899, 514 (New Providence I., Bahamas); 1903, 293 (New Providence and Andros islands, Dec., Jan.; habits).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 198, part, fig. 260.—NICOLL, Ibis, 1904, 572 (Montserrat).—RILEY, Smithson. Misc. Coll., vol. 47, 1904, 286 (Barbuda, Aug., Nov.; Antigua, Oct.).—HARTERT and GRANT, Novit. Zool., xii, 1905, 114 (Flores I., Azores).—BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 201 (Isle of Pines, winter resident).—PREBLE, North Am. Fauna, no. 27, 1908, 378 (Mackenzie and Anderson rivers to Arctic Ocean).—LOWE, Ibis, 1909, 317 (Los Testigos Islands, near Trinidad, Jan.), 339 (Swan I., Caribbean Sea); 1911, 149 (Grand Cayman).—TOWNSEND and BENT, Auk, xxvii, 1910, 14 (Little Natashquan and Mingan rivers, Labrador, June).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 491 (Costa Rica, winter resident).—WORTHINGTON, Ann. Carnegie Mus., vii, 1911, 453 (Great Inagua, Acklin, and Watling islands, Bahamas).
- [*Ceryle*] *alcyon* BOIE, Isis, 1828, 316.—BONAPARTE, Consp. Av., i, 1850, 160.—GUNDLACH, Journ. für Orn., 1861, 334 (Cuba).—GRAY, Hand-list, i, 1869, 97, no. 1187.—COUES, Key N. Am. Birds, 1872, 188, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.—CORY, List Birds West Ind., 1885, 19.—SHARPE, Hand-list, ii, 1900, 50, part.
- Ceryle alcyon alcyon* GRINNELL (J.), Univ. Calif. Pub. Zool., v, no. 12, March 5, 1910, 388, 389.
- Ispida alcyon* SWAINSON, Classif. Birds, ii, 1837, 336.
- M[egaceryle]* *alcyon* REICHENBACH, Handb., Alced., 1851, 25, pl. 412, figs. 3108, 3109.

- Megaceryle alcyon* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 327, part.  
*Ceryle* (*Megaceryle*) *alcyon* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxix, part.  
 [*Streptoceryle*] *alcyon* BONAPARTE, Ateneo Italiano, ii, 1854, 320 (Consp. Volucr.  
 Anisod., 1854, 10).—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890,  
 165 (Jalapa).  
*S*[*treptoceryle*] *alcyon* CABANIS and HEINE, Mus. Hein., ii, 1860, 151 (Jalapa).  
 (?) *Streptoceryle alcyon* CABANIS, Journ. für Orn., 1861, 162 (Costa Rica).  
*Chloroceryle alcyon* SCLATER, Cat. Am. Birds, 1862, 264 (Eastern United States).  
 (?) *Alcedo guacu* VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 406 ("Brazil").  
*Alcedo jaguacati* DUMONT, Dict. Sci. Nat., i, 1816, 455 (Hudson Bay to Brazil;  
 based on Pl. Enl. 593 and 715).  
 [*Megaceryle*] *domingensis* REICHENBACH, Handb., Alced., 1851, 24, pl. 410, fig.  
 3105.  
*Ispida ludoviciana* GMELIN, Syst. Nat., i, pt. 1, 1788, 452 (Based on *Martin-*  
*pecheur de la Louisiana* Daubenton, Pl. Enlum. no. 715; *Crab Catcher* Sloan,  
 Jam. ii, p. 313, no. 54, pl. 55, fig. 3).

### STREPTOCERYLE ALCYON CAURINA (Grinnell).

#### WESTERN BELTED KINGFISHER.

Similar to *S. a. alcyon*, but averaging decidedly larger (except feet), and wing-tip relatively longer.

*Adult male*.—Length (skins), 284–320 (306); wing, 159–169 (163.1); tail, 88–96.5 (92.1); exposed culmen, 55–64 (59.3); tarsus, 11–12.5 (11.4); middle toe, 14–16 (15.4).<sup>a</sup>

*Adult female*.—Length (skins), 290–330 (315); wing, 159–169.5 (165.5); tail, 88–101 (93.3); exposed culmen, 53–71 (59.6); tarsus, 10.5–12 (11.4); middle toe, 15.5–17 (16.2).<sup>b</sup>

Western North America, east to and including Rocky Mountains; north to northern Alaska (valleys of Kowak and Yukon Rivers, shores of Norton Sound, etc.) and Yukon Territory (Yukon Valley); south to western Mexico, in States of Lower California (said not to breed in Cape San Lucas district), Sonora, Chihuahua (Chihuahua City, March, October), Sinaloa (Mazatlán, resident?), Tres Marias Islands (resident?) and Durango (Chacalá, February).

*Alcedo alcyon* (not of Linnæus) AUDUBON, Orn. Biog., i, 1831, 394, part; Synopsis, 1839, 173, part; Birds Am., oct. ed., iv, 1842, 205, part.—PALLAS, Zoogr. Rosso-As., i, 1831, 437 (North Pacific Russian Islands and western shores of Arctic America).—VIGORS, Zool. Beechey's Voy., 1839, 16 (San Francisco, California).—SCHALOW, Journ. für Orn., 1891, 257 (Sitka, Alaska).

*Ceryle alcyon* CASSIN, Illustr. Birds Calif., Tex., etc., 1856, 254, part.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 158, part (Alaskan, Wash., Calif., and New Mex., localities; crit.); Cat. N. Am. Birds, 1859, no. 117, part.—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 167 (Washington; Oregon).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 275 (Sitka; Yukon Valley, up to Fort Yukon; habits).—COOPER, Orn. Calif., 1870, 337.—FINSCH, Abh. Nat. Ver. Brem., iii, 1872, 29 (Alaska).—GRAYSON, Proc. Bost. Soc. N. H., xiv, 1872, 71 (Tres Marias Islands).—COUES, Check List, 1873, no. 286, part; 2d ed., 1882, no. 382, part; Birds Northwest, 1874, 372,

<sup>a</sup> Eighteen specimens.

<sup>b</sup> Fifteen specimens.



- part.—SHARPE, Mon. Alced., 1871, 79, part; Cat. Birds Brit. Mus., xvii, 1892, 125, part (western localities).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 289 (Mazatlan, Sinaloa, and Tres Marias; resident).—HENSHAW, Zool. Exp. W. 100th Merid., 1875, 366.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 392, part.—RIDGWAY, Orn. 40th Parallel, 1877, 545 (Truckee River, Nevada; Parleys Park, Utah); Proc. U. S. Nat. Mus., iii, 1880, 190, part; Nom. N. Am. Birds, 1881, no. 382, part.—NELSON, Cruise of 'Corwin' in 1881 (1883), 75 (shores of Norton Sound, Alaska); Rep. Nat. Hist. Coll. Alaska, 1887, 155 (lower Yukon Valley, etc.).—SALVIN, Proc. Zool. Soc. Lond., 1883, 426 (Esquimault, Brit. Columbia).—HARTLAUB, Journ. für Orn., 1883, 265 (Portage Bay, Chilcat, Departure Bay, and Sitka, Alaska; Vancouver I.).—McLENNAN, Cruise of 'Corwin,' 1884, 117 (Kowak R., n. Alaska); 1885 (1887), 77 (Kowak R.).—TOWNSEND, Cruise of 'Corwin' in 1885 (1887), 92 (upper and middle Kowak R., breeding).—TURNER, Contr. Nat. Hist. Alaska, 1886, 165 (Yukon Valley).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 390, part; 2d ed., 1895, no. 390, part; 3d ed., 1910, 183, part.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 472, part (Tres Marias; Zapatlan, Jalisco; Guanajuato?; Valley of Mexico?).—GRINNELL, Pacific Coast Avifauna, no. 1, 1900, 40 (Kowak R., May-Sept.).—HENSHAW, Birds Hawaiian Islands, 1902, 77 (Hakalau, 1 pair, Nov., 1901).—BREWSTER Bull. Mus. Comp. Zool., xli, 1902, 102 (Cape district, Lower California, autumn, winter, and spring only; crit.).—BAILEY (Florence M.) Handb. Birds W. U. S., 1902, 198, part.—OSGOOD, North Am. Fauna, no. 24, 1904, 70 (Kakhtul R., Alaska Peninsula).—CLARK, Proc. U. S. Nat. Mus., xxxviii, 1910, 60 (Dockton, Washington; Union Bay, Vancouver I.).
- [*Ceryle*] *alcyon* COUES, Key N. Am. Birds, 1872, 188, part.—SHARPE, Hand-list, ii, 1900, 50, part.
- [*Ceryle*] *alcyon* COUES, Key N. Am. Birds, 2d ed., 1884, 470, part.—RIDGWAY, Man. N. Am. Birds, 1887, 279, part.
- Ceryle* (*Megaceryle*) *alcyon* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxix, part.
- Megaceryle alcyon* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 327, part.
- Ceryle alcyon caurina* GRINNELL (J.), Univ. Calif. Pub. Zool., v, no. 12, March 5, 1910, 388, fig. 4 (Montague I., Prince William Sound, Alaska; coll. Mus. Univ. Calif.).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 66 (Boca de Quadra, Chickamin R., Bradfield Canal, Milkof I., and Thomas Bay, s. Alaska); Univ. Calif. Pub. Zool., x, 1912, 32 (crit.; measurements).

### Genus CHLOROCERYLE Kaup.

- Chloroceryle* KAUP, Verh. naturhist. Vereins Hessen, ii, 1848, 68 (Fam. Eisv., 1848, 8). (Type, *Alcedo superciliosa* Linnæus.)
- Amazonis* (not *Amazona* Lesson, 1830) REICHENBACH, Handb., Alcedin., 1851, 28. (Type, *Alcedo superciliosa* Linnæus.)

Medium-sized to very small Alcedinidæ (length about 125–275 mm.) with the exposed culmen more than half as long as wing, ninth primary shorter than seventh, and color of upper parts metallic green.

Bill much longer than head, rather slender, its depth at middle of nostrils equal to much less than one-fourth (usually less than one-fifth) the length of exposed culmen and much greater than its width at same point; culmen nearly straight for most of its length, slightly convex terminally, the basal portion (mesorhinium) slightly but distinctly elevated, more or less distinctly (but not sharply) ridged,

the basal half (more or less) sometimes flattened; gonys decidedly to much more than twice as long as mandibular rami, very faintly to decidedly convex, more or less prominent basally (through contraction of mandibular rami), usually rather distinctly ridged for terminal half or more, sometimes with a median groove on basal portion; commissure nearly straight for most of its length, but basal portion of maxillary tomium strongly convex. Nostril narrow (slit-like), longitudinal or slightly oblique, overhung by a broad operculum. No trace of antrorse bristles at rictus or elsewhere about base of bill. Wing moderate or rather short, rounded, the seventh, and eighth, sixth, seventh, and eighth, or seventh, eighth and ninth, primaries longest, the ninth not longer (usually shorter) than seventh, the tenth (outermost) shorter than fifth, sometimes shorter than sixth. Tail three-fifths to two-thirds as long as wing, rounded. Tarsus longer than inner anterior toe without claw.

*Coloration and plumage.*—Above metallic bronze-green, the tail (sometimes wings also) more or less spotted or barred with white; beneath mostly white (adult males with a pectoral and jugular area of chestnut-tawny) or deep orange-tawny, paler on throat (adult males with a broad jugular band of barred white and blackish). Feathers of crown and occiput blended, not distinctly elongated, those of napes lightly elongated, or (in *C. amazona*) feathers of hinder crown, occiput, and nape narrow and distinctly elongated (as in *Streptoceryle*).

*Range.*—Northern Mexico (including southern Texas) to Peru, Bolivia, Argentina, Paraguay, Uruguay, etc. (Four species, with additional subspecies.)

#### KEY TO THE SPECIES AND SUBSPECIES OF CHLOROCERYLE.

- a. Sides and flanks white, more or less heavily spotted or streaked with dark metallic bronze-green; breast white; males with chest white or buffy crossed by a broken band of dark metallic bronze-green or with a lateral patch of that color, females with chest deep cinnamon-rufous or rufous-chestnut.
- b. Larger (wing 125.5–146, exposed culmen 65–75.5); distinctly crested; sides and flanks striped; no white spots on outer webs of secondaries. (Eastern Mexico to Paraguay, Uruguay, etc.).....*Chloroceryle amazona* (p. 424).
- bb. Smaller (wing 73–88.5, exposed culmen 38–55); not distinctly crested; sides and flanks spotted; outer webs of secondaries spotted or barred with white. (*Chloroceryle americana*.)

- c. Smaller (wing averaging less than 78, tail averaging less than 56, culmen averaging less than 44); bill more slender; white spotting or barring of secondaries less distinct, sometimes nearly obsolete; adult male with foreneck chestnut-rufous, like chest; adult female with anterior under parts strongly suffused with buff. (Guianas; lower Amazon Valley?)

***Chloroceryle americana americana* (extralimital).<sup>a</sup>**

- cc. Larger (wing averaging more than 81, tail averaging more than 56, culmen averaging more than 46); bill stouter; white spotting or barring of secondaries more distinct; adult male with foreneck white like throat; adult female with anterior under parts less strongly buffy.
- d. Smaller (averaging: Wing 81.3 in male, 83.2 in female; tail 56.6 in male, 57.7 in female; culmen 46.8 in male, 47.1 in female); coloration darker, with white spotting on secondaries, etc., less conspicuous, adult male with foreneck less extensively white and blackish submalar streak heavier. (Eastern Panama to State of Chiapas, southern Mexico.)

***Chloroceryle americana isthmica* (p. 428).**

- dd. Larger (averaging: Wing 83.6 in male, 86 in female; tail 58.1 in male, 59.9 in female; culmen 47.4 in male, 46.1 in female); coloration lighter (through greater extent of white markings on upper parts and (in females) greater purity of white on under parts); adult male with foreneck more extensively white and blackish submalar streak narrower, sometimes obsolete. (Mexico in general, except State of Chiapas, and adjacent border of United States.)

***Chloroceryle americana septentrionalis* (p. 431).**

- aa. Sides and flanks uniform orange-chestnut; males with chest, also, uniform orange-chestnut, females with a band across chest of greenish black or bronzy black (sometimes barred with white).
- b. Larger (wing 95–105.5, tail 61.5–73, exposed culmen 48–56); abdomen, lower breast, and under tail-coverts orange-chestnut like rest of under parts. (Eastern Nicaragua to Brazil).....***Chloroceryle inda* (p. 434).**

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<sup>a</sup> [*Alcedo*] *americana* Gmelin, Syst. Nat., i, pt. i, 1788, 451 (based on *Martin-pecheur du Brésil* Brisson, Orn., iv, 510; *Martin-pêcheur vert et blanc de Cayenne* Daubenton, Pl. Enl., pl. 591; etc.).—*Ceryle americana* Boie, Isis, 1828, 316; Sharpe, Mon. Alced., 1870, 89, part, pl. 26; Cat. Birds Brit. Mus., xvii, 1892, 131, part.—*Ceryle americana americana* American Ornithologists' Union Committee, Check List, 3d ed., 1910, 184.—*[Chloroceryle] americana* Reichenbach, Handb., Alced., 1851, 27, pl. 413, figs. 3112, 3113.—(?) [*Alcedo*] *brasiliensis* Gmelin, Syst. Nat., i, pt. i, 1788, 450 (based on *Ispida brasiliensis* Brisson, iv, p. 510; *Gip-gip* Buffon, etc.).—*[Chloroceryle] chalcites* Reichenbach, Handb., Alced., 1851, 28, pl. 415, figs. 3120, 3121 (Guiana).

For the present I restrict this, the original form, to the Guianas, though its range may really include the lower Amazon Valley, possibly Trinidad and Tobago also; but the material available is not sufficient to enable me to work out the South American forms satisfactorily. So far as it goes the material examined strongly indicates the existence of several unrecognized forms, each at least quite as strongly marked as *C. a. cabanisi* of Peru, at least one of which is already provided with a name. This is the large form of southern Brazil, Paraguay, etc., which may be called *Chloroceryle americana viridis* (*Alcedo viridis* Vieillot, Nouv. Dict. d'Hist. Nat., xix, 1818, 413, based on *Martin-pescador verde oscuro* Azara, Apunt. Parag., iii, 389). The birds from Venezuela and Colombia are recognizably different from the Guiana form and also from that occurring in Panama and northward (*C. a. isthmica*); and doubtless other definite geographic areas will be found to have peculiar forms.



bb. Smaller (wing 54.5–60, tail 31.5–39.5, culmen 26–36); abdomen, lower breast, and under tail-coverts white, in strong contrast with orange-chestnut of other under parts. (*Chloroceryle ænea*.)

c. Smaller (wing averaging 57 in male, 59.3 in female); white or buffy spots on secondaries smaller; feathers of back, rump, etc., less extensively white basally. (Costa Rica to southern Brazil, Bolivia, etc.<sup>a</sup>)

*Chloroceryle ænea ænea* (p. 437).

cc. Larger (wing averaging 58.3 in male, 60 in female); white or buffy spots on secondaries larger, forming distinct bars or narrow bands; feathers of back, rump, etc., more extensively white basally. (Nicaragua to Vera Cruz, Mexico).....*Chloroceryle ænea stictoptera* (p. 440).

### CHLOROCERYLE AMAZONA (Latham).

#### AMAZON KINGFISHER.

*Adult male*.—Above, including loreal, orbital, and auricular regions, together with upper and anterior portions of malar region, dark metallic bronze-green, interrupted by a broad collar of white across hindneck, the scapulars with much concealed white on underlying portion; inner webs of rectrices with transverse spots or short bars of white, not reaching to shafts, the outer web of one or more lateral rectrices (on each side) usually also with white spots or bars; a crescentic mark of white immediately beneath eye and usually a more or less distinct supraloral streak of white, but the latter frequently obsolete; lower and posterior portions of malar region, chin, throat, upper foreneck, lower breast, sides, flanks, abdomen, under tail-coverts, under wing-coverts, and much of inner webs of remiges, white; a more or less distinct (usually interrupted) submalar streak of dark metallic bronze-green, sometimes confluent with a longitudinal (sometimes broken) area of the same color on sides of foreneck and chest; sides and flanks broadly striped with dark metallic green or bronze-green; lower foreneck, chest, and upper breast deep cinnamon-rufous or rufous-chestnut (the feathers white or nearly so beneath surface), sometimes (in younger individuals?) intermixed with dark metallic bronze-green and white; bill black, usually pale colored on basal portion of gonys; iris dark brown;<sup>b</sup> legs and feet black;<sup>b</sup> length (skins), 265–325 (270); wing, 125.5–141 (134); tail, 68.5–85 (76.6); exposed culmen, 65.5–76 (69.6); tarsus, 11–13.5 (12.3); middle toe, 15–19 (17).<sup>c</sup>

*Adult female*.—Similar to the adult male but without any cinnamon-rufous or rufous-chestnut on under parts, this replaced by pure white on median portion and dark metallic bronze-green on lateral portions, the latter color sometimes extending across the posterior portion of

<sup>a</sup> I am not sure that specimens from all parts of the South American range of the species should be referred to true *C. ænea*, but the material available is very scant and by no means sufficient to afford a satisfactory solution of the problem.

<sup>b</sup> According to Sumichrast.

<sup>c</sup> Thirty specimens.

the chest, uniting the two lateral areas; length (skins), 265–303 (282); wing, 126–146 (136.1); tail, 74.5–85.5 (80); exposed culmen, 65–77.5 (69.7); tarsus, 11–14 (12.6); middle toe, 15.5–19 (17.3) <sup>a</sup>

*Young male*.—Similar to the adult male but white of chest more or less suffused with pale brownish buffy, dark metallic greenish areas on sides of chest broken by streaks of brownish buffy, and wing-coverts more or less speckled with white.

Southern Mexico, in States of Vera Cruz (Jalapa; Miradór; Misantla; La Antigua; Vega de Casadero; Santa Ana; Plan del Rio; Catemaco; Tlalcotalpám), Puebla (Puente Nacional), Sinaloa (Matatlán; Escuinapa), Colima (Rio Tupila), Oaxaca (Santa Efigénia), Tabasco (Teapa), Yucatan, and Chiapas (Huehuetán) and Territory of Tepic (San Blas), and southward through Guatemala (San Gerónimo; Vera Paz; San José; Huamuchál; Naranjo; Rio Chocán; Los Amates, Yzabál), British Honduras (Cayo; Manatee District), Honduras (Lago de Yojoa; Omoa; Céiba), Nicaragua (Omotepe; Rio Escondido), and Costa Rica (Agua Caliente; Orosi; Navarro de Cartago; Jiménez; Pacuare; Sipúrio, Talamanca; La Junta; Bebedero;

<sup>a</sup> Twenty-seven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Four adult males from Vera Cruz.....	134.4	74.6	71.2	12.1	17.6
One adult male from Sinaloa.....	133.5	78	72	13.5	18.5
One adult male from Colima.....	134.5	77.5	70.5	12	18
One adult male from Chlapas.....	139.5	78	75	13	17
One adult male from Brit. Honduras.....	136	75.5	68.5	12.5	18
One adult male from Nicaragua.....	140.5	78.5	73	13.5	19
Three adult males from Costa Rica.....	134.8	74.8	67.2	12.7	17.3
Five adult males from Panama.....	136.8	76.8	67.5	12.2	17.2
Three adult males from Colombia.....	132.2	77.8	70.3	11.8	16.3
One adult male from British Guiana.....	138	81	67.5	12	16.5
Four adult males from s. e. Brazil.....	127.6	75.1	70.2	12	15.9
Two adult males from Uruguay.....	136.5	84.5	67.7	12	16
One adult male from Paraguay.....	134	80	69	13.5	18
Two adult males from e. Peru.....	128.7	76	70.7	12	16
FEMALES.					
Two adult females from Vera Cruz.....	141.5	80.2	75.7	13.7	18.2
One adult female from Oaxaca.....	141	78	72	12.5	18
One adult female from Guatemala.....	143	80	72	12.5	19
One adult female from Brit. Honduras.....	140.5	84	65	12.5	17.5
One adult female from Honduras.....	136.5	77	70	12	17
One adult female from Nicaragua.....	139.5	79	69.5	14	17.5
Five adult females from Costa Rica.....	138.6	78.3	70.6	13.2	18.4
Three adult females from Panama.....	134.8	78.8	69.3	12.7	17.7
Four adult females from Colombia.....	136.4	80.2	68.8	12.4	17.1
Two adult females from Brit. Guiana.....	132	77	71.7	11.5	16
Six adult females from Brazil.....	130.7	81.8	68.2	11.8	15.8

El Pozo del Rio Grande; El Pozo de Térraba) to Panamá (Lion Hill; Frijole; Paraiso; San Pablo; Rio Gatún; Divala, Chiriqui; Castillo, Santiago, Calovévora, and Chitra, Veragua); nearly the whole of South America, south to Uruguay (Concepción; Santa Ana Saúce; Santa Elena Saúce; Rio Monzón); Paraguay (Lambaré; Villa Concepción; Tayra), Argentina (Córdova; Santa Ana; lower Rio Pilcomayo; Barracas al Sud; Tucumán), Bolivia (Chiquitos; lower Rio Beni; San Luís), and Peru (Pebas; Rio Ucayali; Huallaga Valley; Santa Cruz; Sarayacu; Amable Maria; La Mercéd; Rio Cadena, Cuzco).

[*Alcedo*] *amazona* LATHAM, Index Orn., i, 1790, 257 (Cayenne; based on *Amazonian Kingfisher* Latham, Suppl. Synopsis Birds, 1787, 116).

*Alcedo amazona* VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 399 (Guiana).—BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 292.—HARTLAUB, Index Azara's Apunt., 1847, 26.—TSCHUDI, Wiegmann's Archiv für Naturg., 1844, 39; Fauna Peruana, Aves, 1844-46, 253.—CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 704.—SCHLEGEL, Mus. Pays-Bas, iii, no. 17, 1863, 5; no. 39 (Rev. Crit.), 1874, 2.

*A[lcedo] amazona* LICHTENSTEIN, Verz. Doubl., 1823, 12 (Brazil).—MAXIMILIAN, Beitr. Naturg. Bras., iv, 1832, 12.

[*Ceryle*] *amazona* BOIE, Isis, 1828, 316.

*C[eryle] amazona* GRAY, Gen. Birds, i, 1847, 82.

*Ceryle amazona* GRAY, List Fissirostr. Birds Brit. Mus., 1848, 61.—CASSIN, Cat. Halcyon. Mus. Phila. Acad., 1852, 3 (Puente Nacional, Mexico; Surinam; Brazil; Rio de la Plata); Proc. Ac. Nat. Sci. Phila., 1860, 133 (Rio Nercua, n. Colombia).—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Omoa, Honduras).—PELZELN, Sitz. Ak. Wien, 1856, 515; Orn. Bras., i, Abth., 1868, 23.—SCLATER and SALVIN, Ibis, 1859, 131 (Guatemala; Lake Yojoa, Honduras); Proc. Zool. Soc. Lond., 1867, 978 (Pebas, Peru); 1869, 252 (Venezuela); 1870, 781 (Merida, Venezuela); 1873, 292 (Nauta, Rio Ucayali, Santa Cruz, and Huallaga Valley, e. Peru; whole Amazon Valley; habits; descr. nest and eggs); 1875, 237 (San Cristobal, Venezuela); 1879, 534 (Nichi, Colombia), 632 (Chiquitos, Bolivia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama); ix, 1868, 118 (Costa Rica); Mem. Bost. Soc. N. H., ii, 1874, 290 (Mazatlan, Sinaloa; Rio Tupila, Colima); Bull. U. S. Nat. Mus., no. 4, 1876, 30 (Chihuitan and Santa Efigenia, Oaxaca).—LÉOTAUD, Ois. Trinidad, 1866, 111.—SALVIN, Proc. Zool. Soc. Lond., 1867, 152 (Santiago de Veragua, Panama); 1870, 201 (Calovevora and Chitra, Veragua, Panama); Ibis, 1886, 60 (Bartica Grove, Camacusa, and Merumé Mts., Brit. Guiana).—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 129 (San Blas, Tepic; Teapa, Tabasco; La Antigua, Vega de Casadero, Santa Ana, and Plan del Rio, Vera Cruz; Cayo, Brit. Honduras; San Geronimo and Vera Paz, Guatemala; Honduras; Paraiso, Lion Hill, and Veragua, Panama; etc.).—FINSCH, Abh. Nat. Ver. Brem., 1870, 328 (Mazatlan).—REINHARDT, Ved. Med. Nat. Förh., 1870, 124 (Brazil).—LEE, Ibis, 1873, 133 (Rio Gato, Argentina).—BERLEPSCH, Journ. für Orn., 1873, 270 (Santa Catarina, s. e. Brazil; synonymy; geog. range; etc.); 1887, 22 (Lambaré, Paraguay), 121 (Paraguay); 1889, 308 (Sarayacu, n. e. Peru); Novit. Zool., xv, 1908, 275 (Cayenne).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1874, 547 (Amable Maria, Peru; crit.); Orn. du Pérou, iii, 1886, 102.—ALLEN, Bull. Essex Inst., viii, 1876, 80 (Santarem, Brazil); Bull. Am. Mus. N. H., ii, 1889, 101 (lower Rio Beni, Bolivia); v, 1893, 125 (Chapada, Mattogrosso, s. w. Brazil);



- xiii, 1900 (Bonda, Santa Marta, Colombia).—BOUCARD, Liste Ois. récol. Guat., 1878, 26 (Guatemala); Proc. Zool. Soc. Lond., 1883, 453 (Yucatan).—WHITE, Proc. Zool. Soc. Lond., 1883, 40 (Cordova, Argentina).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 394 (Omotepe, Nicaragua).—BARROWS, Auk, i, 1884, 26 (Concepcion, Uruguay).—BERLEPSCH and IHERING, Zeitschr. Orn., ii, 1885, 160 (Taquara, etc., Rio Grande do Sul, s. Brazil).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 161 (Jalapa, Vera Cruz).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Pacuare, Costa Rica).—SCLATER and HUDSON, Argentine Orn., ii, 1889, 101.—KERR, Ibis, 1892, 138 (lower Rio Pilcomayo, Argentina; habits); 1901, 228 (Villa Concepcion, Paraguay).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 511 (Rio Escondido, Nicaragua; Rio Frio, Costa Rica).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 62 (Trinidad).—APLIN, Ibis, 1894, 191 (Santa Ana Sauce, Santa Elena Sauce, and Rio Monzon, Uruguay).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 475 (Misantla, etc., Vera Cruz; San José, Huamuchal, etc., Guatemala; Agua Caliente, Orosi, Navarro, etc., Costa Rica; Chitra, Calovevora, etc., Panama; etc.).—KOENIGSWALD, Journ. für Orn., 1896, 376 (Sao Paulo, s. Brazil).—HOLMBERG, Segundo Cen. Argentina, 1898, 519.—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Naranjo and Rio Chocan, Guatemala).—IHERING, Rev. Mus. Paulista, iii, 1899, 292 (Iguape, Brazil); iv, 1900, 160 (Novo Fribourgo and Cantagallo, s. Brazil); vi, 1904, 334 (Paraguay).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 35 (La Merced, centr. Peru); Orn. 1906, 122 (Rio Cadena, Cuzco, Peru).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 105 (Caicara, etc., Venezuela).—GOODFELLOW, Ibis, 1902, 211 (Suno, upper Rio Napo, e. Ecuador; habits).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 143 (Ceiba, Honduras).—LÖNNBERG, Ibis, 1903, 454 (San Luis, Bolivia).—GOELDI, Ibis, 1903, 498 (Rio Capim, n. e. Brazil).—BAER, Orn. xii, 1904, 227 (Santa Ana, Argentina).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 352 (Escuinapa, Sinaloa).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 89 (Los Amates, Guatemala).—SNETHLAGE, Journ. für Orn., 1908, 535 (Alcobaça, Tocantins, Brazil).—HARTERT and VENTURI, Novit. Zool., xvi, 1909, 232 (Barracas al Sud and Tucumán, Argentina; descr. eggs).—REISER, Denkw. Mat.-Nat. Kaiserl. Ak. Wiss. Wien, 1910, 61 (Rio San Francisco, n. e. Brazil).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 492 (Costa Rica; habits).—GRANT (C. H. B.), Ibis, 1911, 323 (Tayra, Paraguay).
- [*Ceryle*] *amazona* BONAPARTE, Cons. Av., i, 1850, 160.—GRAY, Hand-list, i, 1869, 97, no. 1189.—PELZELN, Orn. Bras., iv. Abth., 1870, 404.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—BERLEPSCH, Journ. für Orn., 1884, 318 (La Cruz and Lake Paturia, Colombia).—SHARPE, Hand-list, ii, 1900, 50.
- [*Chloroceryle*] *amazona* REICHENBACH, Handb., Alced., 1851, 28, pl. 412, figs. 3110, 3111.
- Chloroceryle amazona* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 405; La Plata Reis., ii, 1861, 446.—SCLATER, Cat. Am. Birds, 1862, 264 (Pará, Brazil; Cayenne; Colombia).—FRENZEL, Journ. für Orn., 1891, 117 (Cordova, Argentina).
- [*Chloroceryle*] *amazonia* CABANIS and HEINE, Mus. Hein., ii, 1860, 148 (Brazil).
- Chloroceryle amazonia* CABANIS, Journ. für Orn., 1862, 161 (Costa Rica); 1874, 90 (Brazil).
- [*Chloroceryle*] *amazonia* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 164 (Brazil).
- Ceryle amazonia* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Panama); 1866, 192 (lower Rio Ucayali, e. Peru); 1867, 279 (Bluefields R., Nicaragua), 581 (Rio Tocantins, Brazil).—SHARPE, Mon. Alced., 1868-1871, 83, pl. 24.—

WYATT, Ibis, 1871, 373 (Rio de Oro, La Cruz, and Lago de Paturia, Colombia, up to 4,000 ft.).

*Alcedo rubescens* VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 408 (Paraguay; based on *Martin-pescador oscuro dorado* Azara, Apunt.).—BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 395.

*Alcedo vestita* DUMONT, Dict. Sci. Nat., xxix, 1823, 272 (Brazil; coll. Mus. Paris?).—LESSON, Traité d'Orn., 1831, 292.—PUCHERAN, Rev. et Mag. de Zool., 1853, 386 (crit.).—HARTLAUB, Journ. für Orn., 1855, 423.

*Ch[loroceryle] leucostriata* REICHENBACH, Handb., Alced., 1851, 27, pl. 414, figs. 3116, 3117 (Guiana; coll. Dresden Mus.).

*Chloroceryle leucostriata* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 406, footnote.

### CHLOROCERYLE AMERICANA ISTHMICA (Goldman).

#### ISTHMIAN GREEN KINGFISHER.

Similar to *C. a. americana*<sup>a</sup> but larger, bill much stouter; blackish submalar stripe narrower (often indistinct or interrupted); breast less heavily spotted with greenish black, and general color of upper parts decidedly less bluish green; adult male with foreneck white, like throat (instead of chestnut-rufous, like chest).

*Adult male*.—Above, including sides of head (except malar region), dark metallic bronze-green, darker and duller (more sooty) on pileum, especially the forehead, interrupted by a white collar across hindneck, the scapulars and interscapulars extensively white basally (the white concealed), the feathers of rump with concealed white spots; forehead sometimes (but rarely) more or less freckled with whitish; wing-coverts usually immaculate, but sometimes with a few minute spots or streaks of white; secondaries with a subbasal narrow band of white, continuous across both webs, this white increasing in extent on inner secondaries where it involves approximately the whole basal half; about midway between this band and tip of secondaries another band, composed of small white spots confined to outer portion of outer web, this followed by another one (sometimes very indistinct or obsolete) of much smaller white spots, while usually each secondary has a minute white terminal spot or edging; inner primaries usually with a single small white spot on outer web anterior to middle portion; middle pair of rectrices mostly blackish, glossed with bluish or bluish green, usually spotted on inner web (sometimes on basal portion of outer web also) with white, sometimes wholly blackish; next pair blackish, the concealed base white and inner web with roundish or oval white spots; four outer rectrices (on each side) immaculate white for basal half or more, the terminal portion blackish broken by white spots or bars on inner web; anterior portion of malar region greenish black, the remainder white (sometimes spotted with greenish black anteriorly or along lower portion), forming a conspicuous stripe which posteriorly involves the side of neck; a greenish black narrow, sometimes broken

<sup>a</sup> See p. 423.

or interrupted, submalar streak; chin, throat, and median portion of upper foreneck immaculate white; sides of upper foreneck, chest, and lateral portion of upper breast deep chestnut-rufous or rufous-chestnut; rest of under parts white, the sides and flanks heavily spotted with greenish black, this heavy spotting sometimes extending across lower breast; under tail-coverts with larger or smaller roundish, subcordate, or transverse spots of greenish black; axillars and under wing-coverts white, the former spotted with dusky the latter with a large V-shaped area of the same; inner web of remiges with large spots of white; bill black, usually paler at tip and on basal portion of gonys; iris dark brown; legs and feet dusky (in dried skins); length (skins), 176–205 (189); wing, 79–83 (81.3); tail, 53.5–59 (56.6); exposed culmen, 43.5–50 (46.8); tarsus, 8–9.5 (9); middle toe, 11–12.5 (11.7).<sup>a</sup>

*Adult female*.—Similar to the adult male but without any chestnut-rufous or rufous-chestnut, the upper chest immaculate buffy white or pale buff (like foreneck, throat, and chin), the lower chest crossed by a broad band heavily spotted with greenish black, the lower breast also with a similar, but usually less distinct, band; white of under parts more or less tinged with buff, especially the chin, throat, and upper chest, which are sometimes wholly light buff; length (skins), 177–204 (189); wing, 79–86 (83.2); tail, 55–60.5 (57.7); exposed culmen, 40–50 (47.1); tarsus, 9–10 (9.5); middle toe, 12–13 (12.4).<sup>b</sup>

*Young male*.—Similar to the adult female, but chest more or less suffused or intermixed with chestnut-rufous or cinnamon-rufous.

*Young female*.—Similar to the adult female but markings on chest in form of broad streaks rather than transverse spots.

Panamá (Lion Hill; Chepo; Paraiso; Rio Lara; Rio Indio; Rio Trinidad; Rio Caño Quebrada; Puerto Bello; Gatún; Cerro Azúl; Sabana de Panamá; David and Divala, Chiriquí; Calovévora and Calobre, Veragua), and northward through Costa Rica (San José; San Carlos; Cartago; Naranjo de Cartago; La Palma de Nicoya; Volcán de Miravalles; Rio Frio; Jiménez; Bonilla; Talamanca), Nicaragua (Bluefields; Chontales; San Juan del Sur; Sucuyá; Los Sábalos; Omotepe; Momotombo; Matagalpa; Rio Escondido), Honduras (Lake Yojoa; San Pedro; Truxillo; Rio Segovia; Yaruca), British Honduras (Belize; Cayo; Old River), Salvadór (La Libertad), and Guatemala (Rio Dulce; Tolimán; Dueñas; Rio Guacalate; San Gerónimo; Huamuchál; Cajabón; Palín; Los Amates, Yzabál; Lake Atitlán) to Chiapas (San Benito).

<sup>a</sup> Twenty-two specimens.

<sup>b</sup> Twenty-three specimens. (For average measurements of specimens from different countries in Central and South America see under *C. a. septentrionalis*, on p. 431.)



- Ceryle americana* (not *Alcedo americana* Gmelin) SCLATER, Proc. Zool. Soc. Lond., 1856, 139 (David, Chiriqui, Panama); 1858, 358 (Lake Yojoa, Honduras).—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Belize, Brit. Honduras).—SCLATER and SALVIN, Ibis, 1859, 131 (Atlantic coast distr. and Dueñas, Guatemala).—TAYLOR, Ibis, 1860, 117 (Lake Yojoa, Honduras).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama).—BOUCARD, Liste Ois. récol. Guat., 1878, 26 (Guatemala).
- Ceryle cabanisi* (not *Alcedo cabanisi* Tschudi) SALVIN, Proc. Zool. Soc. Lond., 1867, 152 (David, Panama); 1870, 201 (Calovevora and Calobre, Veragua, Panama); Ibis, 1872, 321 (Chontales, Nicaragua).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 280 (Bluefields R., Nicaragua); 1870, 837 (coast Honduras).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 118 (San José, San Carlos, and Cartago, Costa Rica).—SHARPE, Mon. Alced., 1868, 87, part.—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 48 (Costa Rica).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 391, part.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Jimenez, San José, and Naranjo de Cartago, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 582 (Truxillo and Rio Segovia, Honduras).—CHERRIE, Auk, ix, 1892, 323 (Costa Rica, both slopes, up to 8,000 ft.).
- [*Ceryle*] *cabanisi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.
- [*Ceryle*] *cabanisi* RIDGWAY, Man. N. Am. Birds, 1887, 279, part.
- Chloroceryle cabanisi* CABANIS, Journ. für Orn., 1861, 256 (Costa Rica).
- Alcedo cabanisii* (not of Tschudi) SCHLEGEL, Mus. Pays-Bas, iii, no. 17, 1863, 5 (Costa Rica; Mexico); no. 39 (Rev. Crit.), 1874, 2 (Costa Rica; Mexico).
- Ceryle americana*, var. *cabanisi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 396, part.
- Ceryle americana cabanisi* NUTTING, Proc. U. S. Nat. Mus., v, 1882, 399 (La Palma de Nicoya, Costa Rica); vi, 1883, 375, 387, 394, 407 (San Juan del Sur, Sucuya, Omotepe, and Los Sábalos, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., v, 1882, 501 (San José, Costa Rica).
- [*Ceryle*] *americana cabanisi* COUES, Key N. Am. Birds, 2d ed., 1884, 470, part.
- [*Ceryle americana*.] Subsp.  $\beta$ . *Ceryle septentrionalis* SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 134, part (no type nor type locality designated).<sup>a</sup>
- [*Ceryle americana*]  $\beta$ . *septentrionalis* SHARPE, Cat. Birds Brit. Mus., xvii, 1892, p. viii, part.
- Ceryle americana septentrionalis* RICHMOND, Proc. U. S. Nat. Mus., xvi, no. 947, Oct. 4, 1893, 511 (Rio Escondido, Nicaragua).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 391, part.—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 144 (Yaruca, Honduras).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1906, 216 (Sabana de Panama).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 89 (Los Amates and Lake Atitlán, Guatemala).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 492 (Costa Rica; crit.; habits).
- [*Ceryle*] *americana septentrionalis* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 279.
- Ceryle septentrionalis* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, Oct., 1895, 476, part (Rio Dulce, Toliman, Dueñas, Rio Guacalate, San Geronimo, and Huamuchal, Guatemala; La Libertad, Salvador; Cayo and Old R., Brit. Honduras; San Pedro, etc., Honduras; Momotombo, Matagalpa, Bluefields, etc., Nicaragua; Valza, San Carlos, Jimenez, etc., Costa Rica; Paraiso, Chepo, etc., Panama).—UNDERWOOD, Ibis, 1896, 443 (Volcan de Miravalles, Costa Rica).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Rio Lara, Panama).

<sup>a</sup> According to Mr. C. Chubb, in letter to E. A. Goldman, Sharpe's type is from Teapa, Tabasco, and therefore belongs to the Mexican form.

[*Ceryle*] *septentrionalis* SHARPE, Hand-list, ii, 1900, 50, part.

*Ceryle americana isthmica* GOLDMAN, Smithson. Misc. Coll., 56, no. 27, Dec. 1, 1911, 1 (Rio Indio (near Gatun), Canal Zone, Panama; coll. U. S. Nat. Mus.).

### CHLOROCERYLE AMERICANA SEPTENTRIONALIS (Sharpe).

#### TEXAN GREEN KINGFISHER.

Similar to *C. a. isthmica* but larger; white of throat encroaching more on upper chest; blackish submalar stripe or streak less distinct (often obsolete); secondaries much more distinctly spotted with white; under parts usually less heavily, or less extensively, spotted, and fore part of pileum usually streaked with whitish, this often forming a more or less distinct supraloral line.

*Adult male*.—Length (skins), 182–203 (192); wing, 80–88 (83.6); tail, 56.5–61.5 (58.1); exposed culmen, 43–50.5 (47.4); tarsus, 9–10 (9.5); middle toe, 11–12.5 (11.7).<sup>a</sup>

*Adult female*.—Length (skins), 188–203 (196.8); wing, 83.5–90 (86); tail, 58–62 (59.9); exposed culmen, 41–50 (46.1); tarsus, 9–10.5 (9.6); middle toe, 11–13 (12.1).<sup>b</sup>

Southern Mexico, in States of Tabasco (Teapa), Yucatan, etc., northward over the whole of Mexico (except higher elevations and unwatered districts) to southern border of United States (Texas to Arizona);

<sup>a</sup> Twenty-three specimens.

<sup>b</sup> Fifteen specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
MALES.					
Six adult males from Texas.....	83.3	57.6	47.1	9.2	12
Seven adult males from Nuevo Leon (6) and n. Tamaulipas (1)...	84.2	57.8	46.5	9.6	11.7
Three adult males from Vera Cruz (2) and s. Tamaulipas (1).....	83.5	58.5	48.7	9.5	11.5
Four adult males from Jalisco (2) and Colima (2) .....	85.1	59.7	47	9.7	11.6
Two adult males from Oaxaca.....	81.2	57.5	47.5	9.5	12
One adult male from Tabasco.....	80	57	45	9.5	11
One adult male from Guatemala ( <i>C. a. isthmica</i> ).....	82	58.5	46.5	9.5	11
Three adult males from Honduras ( <i>C. a. isthmica</i> ).....	80.3	55.8	49.2	9.2	11.8
Two adult males from Nicaragua ( <i>C. a. isthmica</i> ).....	80.2	55	47.5	9.2	11.7
Three adult males from Costa Rica ( <i>C. a. isthmica</i> ).....	82.5	57	47.3	9.2	11.8
Three adult males from w. Panama ( <i>C. a. isthmica</i> ).....	81.7	56.8	44.5	9.3	11.7
Ten adult males from Canal Zone, e. Panama ( <i>C. a. isthmica</i> )....	81.3	56.8	46.4	8.8	11.7
Four adult males from n. e. Colombia ( <i>C. a. —?</i> ).....	74.9	52.1	40.7	8.1	11.2
Four adult males from w. Colombia ( <i>C. a. —?</i> ).....	79	55.7	40.2	8.1	12
Four adult males from Venezuela ( <i>C. a. —?</i> ).....	76.9	53.9	41.5	8.9	11.1
One adult male from Trinidad ( <i>C. a. —?</i> ).....	76	51	38	.....	.....
Three adult males from Tobago ( <i>C. a. —?</i> ).....	77.2	50.7	41	8.7	11.2
Two adult males from British Guiana ( <i>C. a. americana</i> ).....	75.2	54.2	43.2	8.2	10.2
One adult male from Diamantina, lower Amazon ( <i>C. a. americana ?</i> ) .....	76	54.5	43	8	10
Five adult males from s. e. Brazil ( <i>C. a. —?</i> ).....	78.9	59.8	44.5	8.8	11.1
One adult male from Paraguay ( <i>C. a. viridis</i> ).....	80.5	60	40.5	8.5	10.5
One adult male from Uruguay ( <i>C. a. viridis</i> ).....	80	61	42	8.5	12
One adult male from Chauchamoyo, e. Peru ( <i>C. a. —?</i> ).....	79.5	54	41	.....	.....

northward in Texas to Nueces, Bexar, Comál, Mason, Kerr, Edwards, Maverick, Kinney, and Valverde counties. (The following localities are represented by specimens examined in this connection or recorded by authorities cited: *Texas*: Devils River, Valverde Co.; Fort Clark, Kinney Co.; Ingraham, Kerr Co.; Nueces River and Corpus Christi, Nueces Co.; San Antonio, Bexar Co.; Eagle Pass, Maverick Co.; Fort Brown, Cameron Co.; Leona River. *Arizona*: Colorado River, between Fort Yuma and Fort Mojave. *Tamaulipas*: Matamoras; Hidalgo; Aldema; Sierra Madre near Victoria; Tampico; Alta Mira. *Nuevo León*: Monteréy; Linares; Rio Salado. *Chihuahua*: Chihuahua City. *Sonora*: Ysleta. *Sinaloa*: Mazatlán; Presidio de Mazatlán; Escuinapa; Arroyo de Limones. *Tepic*: Tepic; San Blas. *Jalisco*: Guadalajara; Chapala; Atemajác. *Durango*: Rosário; Santuário; Las Bocas; Rio Sestín. *Guanajuato*. *Aguas Calientes*: Colotán. *Mexico*; near City of Mexico. *San Luis Potosí*: Hacienda Angostura; Vallés. *Puebla*: Metlaltoyuca; Izucar de Matamoras; Chietla. *Vera Cruz*: Orizaba; Miradór; Jalapa; Córdova; Misantla; Vega de Casadero; Coátepec; Santa Ana; Rio Rancho Nuevo;

Footnote—Continued.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
FEMALES.					
Five adult females from Texas.....	85.1	59.3	44.2	9.8	12
Two adult females from Nuevo Leon.....	89.2	61.2	48.5	9.5	12.5
One adult female from Chihuahua.....	88	60	45	9.5	12
One adult female from Jalisco.....	85.5	60.5	46.5	9.5	12.5
One adult female from Tepic.....	83.5	61	45.5	9	13
One adult female from San Luis Potosí.....	88	60	46.5	10	11.5
One adult female from Puebla.....	86	58	49	10	11
One adult female from Guanajuato.....	86	60.5	45.5	9	12
Two adult females from Oaxaca.....	84.2	60	46.7	10.2	12.2
Two adult females from Chiapas ( <i>C. a. isthmica</i> ?).....	82.7	58.5	47.7	9.7	12.5
Three adult females from Guatemala ( <i>C. a. isthmica</i> ?).....	83.8	56.8	46.3	9.8	12.7
One adult female from s. Honduras ( <i>C. a. isthmica</i> ).....	83.5	59	48.5	9.5	12
Three adult females from Nicaragua ( <i>C. a. isthmica</i> ).....	81.8	56.2	45.7	10	12.3
Four adult females from Costa Rica ( <i>C. a. isthmica</i> ).....	83.6	58.5	45.6	9.2	12.2
Ten adult females from Canal Zone, e. Panama ( <i>C. a. isthmica</i> )....	83.5	57.7	46	9.3	12.3
Four adult females from Santa Marta, Colombia ( <i>C. a. —?</i> )....	79.4	54.9	39.5	8.6	11.7
One adult female from Venezuela ( <i>C. a. —?</i> ).....	78.5	54	42	9	11.5
One adult female from Trinidad ( <i>C. a. —?</i> ).....	77	55	38	.....	.....
One adult female from Tobago ( <i>C. a. —?</i> ).....	79	56.5	42.5	10	11.5
One adult female from British Guiana ( <i>C. a. americana</i> ).....	77	55	43.5	9	11
One adult female from Surinam ( <i>C. a. americana</i> ).....	78	56.5	38.5	8	12
Two adult females from Diamantina, lower Amazon ( <i>C. a. americana</i> ?).....	76	52	43	8.5	10.7

I find it difficult to decide whether specimens from Chiapas and Guatemala should be referred to *C. a. septentrionalis* or to *C. a. isthmica*. They are, in fact, as a whole intermediate, some specimens being more like one form, some more like the other.



Hacienda Tortugas; Atoyác; Playa Vicente. *Oaxaca*: Santa Efigénia; Oaxaca; Tehuántepec; Tuxtepec; Tapanátepec; Chihuitán; Sola; Juchatengo; Chimalapa; Sierra de Santo Domingo. *Colima*: Plains of Colima; Rio Tupila. *Tabasco*: Teapa. *Yucatan*. Stated to occur in Lower California by Salvin and Godman, who erroneously cite as authority for the record "History of North American Birds"; but reference to that work shows that no mention whatever is made of Lower California in the account of this species.)

*Ceryle americana* (not *Alcedo americana* Gmelin) LAWRENCE, Ann. Lyc. N. Y., v, 1852, 118 (Rio Grande, Texas).—WOODHOUSE, in Rep. Sitgreaves's Expl. Zuni and Col. R., 1852, 65 (Texas, "some tributaries of the Rio Grande").—BAIRD, in Stansbury's Rep. Gt. Salt Lake, 1853, 327 (Rio Grande, Texas); Rep. Pacific R. R. Surv., ix, 1858, 159 (Nueces and Devils rivers, w. Texas; Nuevo Leon); Rep. U. S. and Mex. Bound. Surv., ii, pt. ii, 1859, 7, pl. 7 (w. Texas); Cat. N. Am. Birds, 1859, no. 118.—CASSIN, Illustr. Birds Calif., Tex., etc., 1855, 255.—SCLATER, Proc. Zool. Soc. Lond. 1856, 286 (Cordova, Vera Cruz); 1859, 53, 367 (Jalapa, Vera Cruz).—BREWER, N. Am. Oology, i, 1857, 3, pl. 4, fig. 53 (egg).—DRESSER, Ibis, 1865, 472 (Matamoras, Tamaulipas; Nueces R., Leona R., and Eagle Pass, Tex.).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 59 (Colorado R., between Ft. Yuma and Ft. Mojave); Ibis, 1866, 263 (Colorado R.).—COOPER, Orn. Calif., 1870, 339.

*Ceryle* (*Chloroceryle*) *americana* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, p. xxix.

*Chloroceryle americana* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 312.

*Ceryle cabanisii* (not *Alcedo cabanisi* Tschudi) CASSIN, Cat. Halcyonidæ Mus. Phila. Acad., 1852, 3, part (Mexico).

*Ceryle cabanisi* SHARPE, Mon. Alced., 1868, 87, part.—BOUCARD, Proc. Zool. Soc. Lond., 1883, 453 (Yucatan).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 161 (Chietla and Izucar de Matamoras, Puebla; Jalapa, Vera Cruz).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 391, part.—HANCOCK, Bull. Ridgw. Orn. Club., no. 2, 1887, 16 (Corpus Christi, Texas, 1 spec., March 16).—LLOYD, Auk, iv, 1887, 190 (Nueces and Frio Cañons, Edwards Co., Texas).—BECKHAM, Proc. U. S. Nat. Mus., x, 1888, 663 (San Antonio and Corpus Christi, Texas).—COOKE, Bird Migr. Miss. Val., 1888, 127 (Mason, Edwards, and Comal counties, Texas).—ATTWATER, Auk, ix, 1892, 234 (San Antonio, Texas, resident).

[*Ceryle*] *cabanisi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.

[*Ceryle*] *cabanisi* RIDGWAY, Man. N. Am. Birds, 1887, 279, part.

[*Chloroceryle*] *cabanisi* CABANIS and HEINE, Mus. Hein, ii, 1860, 147, excl. syn. part (Mexico).

*Chloroceryle cabanisi* SCLATER, Cat. Am. Birds, 1862, 265 (Orizaba, Vera Cruz); Proc. Zool. Soc. Lond., 1864, 176 (near City of Mexico).

[*Chloroceryle*] *cabanisi* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 164 (Mexico).

[*Ceryle*] *americana* var. *cabanisti* COUES, Key N. Am. Birds, 1872, 188.

*Ceryle americana* . . . var. *cabanisi* COUES, Check List, 1873, no. 287.

*Ceryle americana*, var. *cabanisi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 396, part, pl. 45, fig. 9.—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 290 (Mazatlan, Sinaloa; Tepic; Plains of Colima and Tupila R., Colima; habits); Bull. U. S. Nat. Mus., no. 4, 1876, 30 (Santa Efigenia, Oaxaca).—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 142 (Ft. Brown, Texas, May-Oct.).—BREWSTER, Bull. Nutt. Orn. Club, iv, 1879, 79 (Comal Co., Texas; descr. nest and eggs).

- Ceryle americana cabanisi* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 190; Nom. N. Am. Birds, 1881, no. 383.—COUES, Check List, 2d ed., 1882, no. 424.
- C[eryle] americana cabanisi* COUES, Key N. Am. Birds, 2d ed., 1884, 470.
- Ceryle cabansi* BAILEY (H. H.), Auk., xxiii, 1906, 388 (San Blas, Tepic).
- [*Ceryle americana*.] Subsp.  $\beta$ . *Ceryle septentrionalis* SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 134, part (no type nor type locality designated; but type said to be Teapa, Tabasco).<sup>a</sup>
- [*Ceryle americana*]  $\beta$ . *septentrionalis* SHARPE, Cat. Birds Brit. Mus., xvii, 1892, p. viii.
- Ceryle americana septentrionalis* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 61; Check List, 2d ed., 1895, no. 391; 3d ed., 1910, p. 184.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 39, pl. 1, fig. 4 (egg).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 199.—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxi, 1905, 351 (Arroyo de Limones and Escuinapa Sinaloa); xxii, 1906, 164 (Rosario, Santuario, Las Bocas, and Rio Sestin, Durango).—LACEY, Auk, xxviii, 1911, 209 (Kerrville, Texas, common, breeding; descr. nest).
- C[eryle] a[mericana] septentrionalis* GOLDMAN, Smithson. Miss., Coll. 56, no. 27, Dec. 1, 1911, 1 (crit.).
- Ceryle septentrionalis* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 60, Oct., 1895, 476, part (Texas to Arizona; "Lower California"; Hermosillo, Sonora; Isleta, Mazatlan, and Presidio de Mazatlan, Sinaloa; San Blas, Tepic; Colotan, Aguas Calientes; Guanajuato; Guadalajara, Jalisco; Rio Tupila, etc., Colima; Rio Salado, Nuevo Leon; Sierra Madre near Victoria, Aldema, and Tampico, Tamaulipas; Valles, San Luis Potosi; Misantla, Vega del Casadero, Jalapa, Coatepec, Santa Ana, Rio Rancho Nuevo, Hacienda Tortugas, Orizaba, Cordova, Atoyac, and Playa Vicente, Vera Cruz, Valley of Mexico; Morelia, Chietla, etc., Puebla; Sola, Juchetengo, Oaxaca City, Chihuitan, Tapanatepec, Chimalapa, Sierra de Santo Domingo, Tehuantepec, etc., Oaxaca; Teapa, Tabasco; Yucatan).
- [*Ceryle*] *septentrionalis* SHARPE, Hand-list, ii, 1900, 50, part.

### CHLOROCERYLE INDA (Linnaeus).

#### GREEN AND RUFOUS KINGFISHER.

*Adult male*.—Above dark metallic bronze-green, darker and duller on pileum (sometimes approaching sooty blackish on forehead and anterior portion of crown), the forehead sometimes (in younger individuals?) minutely flecked or speckled with pale brownish buffy or dull whitish; scapulars and interscapulars with much concealed white on basal portion or white spotting on middle portion of feathers; outer webs of secondaries with a few small white spots along edge, the wing-coverts, rump, and upper tail-coverts sometimes also minutely speckled with whitish; inner webs of rectrices with transverse spots, or short bars, of white near edge, the outer webs also sometimes with similar but very much smaller white markings; chin very pale orange-buff or white tinged with orange-buff, the throat similar but feathers tipped with deeper orange-buff or orange-rufous (the feathers paler beneath surface, passing into white basally), the

<sup>a</sup> Mr. C. Chubb, in letter to E. A. Goldman.

remaining under parts plain rich deep orange-rufous or chestnut-rufous; axillars and under wing-coverts uniform orange-ochraceous; inner webs of remiges with transverse spots of white, these not reaching to shafts; bill black, the lower basal portion pale brownish (in dried skins); legs and feet brownish (in dried skins); length (skins), 199–235 (212); wing, 93–98.5 (95.5); tail, 58.5–66 (62.4); exposed culmen, 48–55 (51.2); tarsus, 9–10.5 (10); middle toe, 13–14 (13.5).<sup>a</sup>

*Adult female*.—Similar to adult male, but the light orange-rufous of foreneck separated from the deep orange-rufous or chestnut-rufous of breast, etc., by a broad jugular band of uniform, or nearly uniform, dark metallic bronze-green laterally, broadly barred with white and dark metallic bronze-green medially; length (skins), 200–238 (218); wing, 95–105.5 (99.2); tail, 61.5–73 (65); exposed culmen, 47–56 (50.9); tarsus, 9.5–10.5 (10.1); middle toe, 13–15 (13.9).<sup>b</sup>

*Young male*.—Similar to the adult female, but white of chest more or less tinged with buff or cinnamon-buff, and wing-coverts and secondaries with a greater or less number of more or less distinct small spots or flecks of white.

Eastern Nicaragua (Greytown; Rio Escondido), eastern Costa Rica (Rio Frio), Panamá (Verágua; Lion Hill; Laguna del Pita; Colón; Rio Indio; Puerto Bello; San Miguél Island), and southward over lowlands of South America to Ecuador (Sarayacu; Palmál), eastern Peru (Santa Cruz, Rio Huallaga), southern Brazil (Cantogallo; Santa Catarina?; Bahia; etc.), British Guiana (Demerara; Ourumu; Camacusa; Bartica Grove; Mazaruni River), Surinam (Paramaribo; Maruni River), and Cayenne.

<sup>a</sup> Twenty-five specimens.

<sup>b</sup> Nineteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle anterior toe.
MALES.					
One adult male from Costa Rica.....	96			10.3	
Nine adult males from Panama (mainland).....	96	62.3	51.8	10.3	13.3
Five adult males from San Miguel I., Panama.....	94.7	60.2	51	9.7	13.6
Two adult males from Colombia.....	93.7	63	52	10	13.5
Three adult males from Venezuela.....	94.8	63.3	50.7	10	13.7
Five adult males from Brit. Guiana, Cayenne, and Surinam...	96.1	64.5	50.1	9.7	13.6
FEMALES.					
One adult female from Nicaragua.....	98.5	64	47	10.5	14.5
Six adult females from Panama (mainland).....	98.2		51.4	9.9	13.4
Two adult females from San Miguel I., Panama.....	101.5	64.7	51.2	9.5	14
Three adult females from Colombia.....	98	65.7	49.7	10.5	14.2
Two adult females from Venezuela.....	97.5	64.7	51	10.2	14
Four adult males from Brit. Guiana (3) and Surinam (1).....	99.6	66.4	51.2	10.4	13.7
One adult female from Brazil.....	105.5	73	56	9.5	15



- [*Alcedo*] *inda* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 179 ("India occidentali;" based on *Spotted Kingfisher*, *Halcyon maculata* Edwards, Gleanings, 262, pl. 335).—GMELIN, Syst. Nat., i, pt. i, 1788, 448.—LATHAM, Index Orn., i, 1790, 259.
- Alcedo inda* SHAW and NODDER, Nat. Misc., xxi, 1809, pl. 889.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 411 (Cayenne).—BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 397.
- C[eryle]* *inda* GRAY, Gen. Birds, i, 1847, 82.
- Ceryle inda* CASSIN, Cat. Halcyonidæ Mus. Phila. Acad., 1852, 3 (Cayenne); Proc. Ac. Nat. Sci. Phila., 1860, 133 (Turbo, Colombia).—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 526.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama); viii, 1864, 183 (Greytown, Nicaragua).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill); 1867, 581 (Mexiana I., Brazil); 1873, 293 (Santa Cruz, Rio Huallaga, e. Peru; habits).—SHARPE, Mon. Alced., i, 1869, 91, pl. 27; Cat. Birds Brit. Mus., xvii, 1892, 137 (Veragua, Panama; Sarayacu, e. Ecuador; Camacusa and Bartica Grove, Brit. Guiana; Maroni R., Surinam; Cayenne; Mexiana I., Pernambuco, and Bahia, Brazil).—BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 120 (Palma, Ecuador); Novit. Zool., xv, 1908, 275 (Cayenne).—TACZANOWSKI, Orn. du Pérou, iii, 1886, 103.—SALVIN, Ibis, 1886, 60 (Bartica Grove and Camacusa, Brit. Guiana).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 512 (Greytown and Rio Escondido, Nicaragua; Rio Frio, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 478.—GOELDI, Ibis, 1897, 159 (Counany, n. e. Brazil).—LOAT, Ibis, 1898, 565 (Mazaruni R., Brit. Guiana).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Laguna del Pita, Panama).—IHERING, Rev. Mus. Paulista, iii, 1899, 293 (Iguapé, Brazil); iv, 1900, 160 (Cantogallo, s. Brazil).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 104 (Rio Mato and La Pricion, Venezuela).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 17 (Loma del Leon, Panama); Auk, xviii, 1901, 26 (San Miguel I., Panama).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1905, 149 (San Miguel I.).—ALLEN, Bull. Am. Mus. N. H., xvi, 1905, 276 (Don Diego, Santa Marta, Colombia).—HAGEMANN, Zool. Jahrb., 1907, 35 (Mexiana I.).—SNETHLAGE, Bol. Mus. Goeldi, v, 1908, 61 (Rio Purús, w. Brazil); Journ. für Orn., 1908, 19 (Rio Purús).—REISER, Denkw. Mat.-Nat. Kaiserl. Ak. Wiss. Wien, 1910, 61 (coast distr. Piahy, n. e. Brazil).
- [*Ceryle*] *inda* GRAY, Hand-list, i, 1869, 98, no. 1192.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—SHARPE, Hand-list, ii, 1900, 50.
- Chloroceryle inda* SCLATER, Cat. Am. Birds, 1862, 265 (Pará, Brazil; Cayenne).
- Alcedo viridirufa* BODDAERT, Tabl. Pl. Enl., 1783, 36 (based on *Martin-pêcheur verd et roux de Cayenne* Daubenton, Pl. Enl., pl. 592).—SCHLEGEL, Mus. Pays-Bas, iii, no. 17, 1863, 5 (crit.); no. 39 (Rev. Crit.), 1874, 2.
- C[eryle]* *viridirufa* GRAY, Gen. Birds, i, 1847, 82.
- Ceryle viridirufa* GRAY, List Fissirostr. Birds Brit. Mus., 1848, 61.
- C[hlroceryle]* *viridirufa* CABANIS and HEINE, Mus. Hein., ii, Jan., 1860, 146 (Brazil; Cayenne; Guiana).
- [*Chloroceryle*] *viridirufa* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 164 (Brazil; Cayenne; Guiana).
- (?) [*Alcedo*] *surinamensis* GMELIN, Syst. Nat., i, pt. i, 1788, 448 (based on *Martin-pecheur* Fermin, Surin. II, p. 181; *Surinam Kingfisher* Latham, Syn., i, pt. ii, p. 642, no. 33).—LATHAM, Index Orn., I, 1790, 259.
- (?) *Alcedo surinamensis* VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 410 (Guiana).
- (?) *C[eryle]* *surinamensis* GRAY, Gen. Birds, i, 1847, 62.

- [*Alcedo*] *bicolor* GMELIN, Syst. Nat., i, pt. i, 1788, 451 (based on *Martin-pêcheur verd et roux de Cayenne* Daubenton, Pl. Enl., pl. 592).—LATHAM, Index Orn., i, 1790, 258.
- Alcedo bicolor* TEMMINCK, Cat. Syst., 1807, 69.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 414 (Cayenne).—BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 290.—LESSON, Traité d'Orn., 1831, 242.
- A[lcido]* *bicolor* MAXIMILIAN, Beitrag. Naturg. Bras., iv, 1832, 23.—CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 704.
- Ceryle bicolor* KAUP, Verh. naturhist. Vereins Hessen, ii, 1848, 68 (Fam. Eism., 1848, 8).—PELZELN, Sitz. Ak. Wien, 1856, 515; Orn. Bras., i. abth., 1868, 23.
- [*Ceryle*] *bicolor* BOIE, Isis, 1828, 316.—BONAPARTE, Consp. Av., i, 1850, 160.—PELZELN, Orn. Bras., iv. abth., 1871, 404.
- C[hloroceryle]* *bicolor* REICHENBACH, Handb., Alced., 1851, 28, pl. 414, figs. 3118, 3119.
- Chloroceryle bicolor* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 406.
- [*Amazonis*] *bicolor* BONAPARTE, Ateneo Italiano, ii, 1854, 320 (Consp. Volucr. Anisod., 1854, 10).
- (?) [*Alcedo*] *maculata* GMELIN, Syst. Nat., i, pt. i, 1788, 451 (based on *Ispida brasiliensis naevia* Brisson, Orn., iv, p. 524, no. 25, etc).—LATHAM, Index Orn., i, 1790, 258.—BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 293.

### CHLOROCERYLE ÆNEA ÆNEA (Pallas).

#### LEAST GREEN KINGFISHER.

*Adult male*.—Above, including sides of head, dark metallic green, darker and less glossy on pileum, the scapulars (especially the posterior ones) with concealed portion extensively white; outer webs of secondaries with distinct (though small) spots of buff or buffy white; primaries dull black or slate-black; tail dark metallic green, bluish green, or greenish blue-black, the inner webs of rectrices (except middle and outer pairs) with a greater or less number of white spots, the three outer rectrices wholly white basally, the fourth partly so; an elongated supraloral spot of ochraceous-buff; an indistinct whitish mark beneath lower eyelid; malar region and sides of neck clear orange-tawny, fading on chin and throat into orange-buff, deepening on lower foreneck, chest, sides of breast, sides, and flanks into bright, deep, orange-rufous or rufous-chestnut; median portion of breast, abdomen, anal region, and under wing-coverts immaculate white; axillars and under wing-coverts clear ochraceous-buff or orange-buff; inner webs of secondaries mostly white or pale buff; bill black, the basal portion of gonys light colored (pinkish or flesh colored in life); iris dark brown; legs and feet dusky (in dried skins); length (skins), 120–145 (132); wing, 54.5–59 (57); tail, 31.5–36.5 (35.1); culmen, 26–36 (31); tarsus, 6.5–8 (7.2); inner anterior toe, 7.5–9.5 (8.1).<sup>a</sup>

*Adult female*.—Similar to the adult male but orange-tawny of foreneck separated from the deep orange-rufous or rufous-chestnut

<sup>a</sup> Twenty-two specimens.

of upper breast, etc., by a broad band of greenish black, the feathers of which are more or less distinctly margined at tip with white, some of them with irregular concealed white spots; length (skins), 120-141 (131); wing, 55.5-60 (59.3); tail, 34-38.5 (36); culmen, 27.5-34 (31.2); tarsus, 7-8 (7.6); inner anterior toe, 8-9.5 (8.5).<sup>a</sup>

*Young male*.—Similar to the adult male but color of under parts paler and much duller, the chin, throat, foreneck, malar region, and sides of neck light orange-buff (paler on chin), the chest, upper breast, sides, and flanks rufous-tawny, indistinctly streaked on chest with blackish; secondaries usually with distinct (often conspicuous) whitish spots.

*Young female*.—Similar to the adult female but coloration of under parts paler and duller (as in young male) and jugular band narrower and more broken medially.

Western Costa Rica (Bebedero; Bolsón; Punta Arenas; La Palma de Nicoya; Talamanca), Panamá (Divala; Lion Hill; Gatún; Darién; Rio Indio; Puerto Cabello; Obispo), and southward through Colombia, Venezuela, the Guianas, and Amazon Valley to eastern Peru (Pebas; Chayavetas) and southern Brazil (Chapada, Matto Grosso; Iguapé, São Paulo; Bahia; Pernambuco; etc.).

<sup>a</sup> Eighteen specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
MALES.					
One adult male from Bolivia (lower Rio Beni).....	58	34	31.5	.....	.....
Two adult males from Brazil.....	56.5	35.5	30.5	7.2	8.2
Five adult males from Surinam.....	56	34.6	28.1	6.9	8.2
One adult male from Venezuela.....	57	35	29.5	7	8.5
Two adult males from Trinidad.....	58	35.7	30.5	7	8.5
One adult male from eastern Panama (Darien).....	57.5	35	30.5	.....	.....
Seven adult males from Panama.....	56.8	35.3	32.5	7.3	8.9
Three adult males from Costa Rica.....	57.8	35.3	33.5	7.7	8.8
One adult male from Guatemala ( <i>C. x. stictoptera</i> ).....	58	39.5	34	8	9
One adult male from Chiapas ( <i>C. x. stictoptera</i> ).....	58.5	37.5	32	7.5	9
Two adult males from Campeche and Yucatan ( <i>C. x. stictoptera</i> ).....	58.5	36.5	31	7.5	9
One adult male from Cozumel Island ( <i>C. x. stictoptera</i> ).....	59	36	31.5	7	8.5
Two adult males from Vera Cruz ( <i>C. x. stictoptera</i> ).....	57.7	37	33.5	7.2	9
FEMALES.					
One adult female from Brazil (Chapada Matto Grosso).....	58	36	29	.....	.....
Four adult females from Cayenne (2) and Surinam (2).....	56.6	35.5	29.6	7.6	8.2
Ten adult females from Panama (Canal Zone).....	57.2	36.2	31.9	7.7	8.9
Three adult females from Costa Rica.....	58.5	35.5	32	7.5	9
One adult female from Nicaragua ( <i>C. x. stictoptera</i> ).....	60	34	30	.....	.....
One adult female from Guatemala ( <i>C. x. stictoptera</i> ).....	60	36.5	31.5	7.5	9
One adult female from Vera Cruz ( <i>C. x. stictoptera</i> ).....	60	39	34.5	8	9.5



- Alcedo (aenea)* PALLAS, in Vroeg's Cat. Ois., Adumbr., 1764, 1, no. 54 (Surinam).  
*Ceryle aenea* BERLEPSCH, Novit. Zool., xv, Nov., 1908, 275 (Cayenne).  
*Ceryle aenea aenea* CARRIKER, Ann. Carnegie Mus., vi, 1910, 493 (Costa Rica; crit.; habits).
- [*Alcedo*] *superciliosa* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 179 (Cayenne; based on *Little Green and Orange-coloured Kingfisher*, *Ispida minor viride aurantioque* Edwards, Gleanings, i, 73, pl. 245).—GMELIN, Syst. Nat., i, pt. i, 1788, 450.—LATHAM, Index Orn., i, 1790, 259.
- Alcedo superciliosa* BODDAERT, Tabl. Pl. Enl., 1783, 47.—TEMMINCK, Cat. Syst., 1807, 70.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xix, 1818, 414.—BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 287.—LESSON, Traité d'Orn., 1831, 244.—CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 704.—SCHLEGEL, Mus. Pays-Bas, iii, no. 17, 1863, 6; no. 39 (Rev. Crit.), 1874, 2.
- [*Ceryle*] *superciliosa* GRAY, Gen. Birds, i, 1847, 82.
- Ceryle superciliosa* GRAY, List Fissirostr. Birds Brit. Mus., 1848, 62.—CASSIN, Cat. Alced. Mus. Phila. Acad., 1852, 3 (Surinam; Cayenne); Proc. Ac. Nat. Sci. Phila., 1860, 134 (Turbo, Colombia).—PELZELN, Sitz. Ak. Wien, 1851, 515; Orn. Bras., i, Abth., 1868, 24.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama); ix, 1868, 118 (Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill, Panama); 1867, 581 (Mexiana I., Brazil), 751 (Rio Huallaga, e. Peru); 1873, 293 (Chayavetas, e. Peru).—LÉOTAUD, Ois. Trinidad, 1866, 114.—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—SHARPE, Mon. Alced., i, 1868-71, 93, pl. 28; Cat. Birds Brit. Mus., xvii, 1892, 138 (Panama; Trinidad; Demerara R., Camacusa, and Bartica Grove, Brit. Guiana; Maroni R., Surinam; Cayenne; Mexiana I.; Pebas and Chayavetas, e. Peru; Bahia and Pernambuco, e. Brazil).—ALLEN, Bull. Essex Inst., viii, 1876, 80 (Santarem, lower Amazon); Bull. Am. Mus. N. H., ii, 1889, 101 (lower Rio Beni, Bolivia); v, 1893, 125 (Chapada, Matto Grosso, s. w. Brazil).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 400 (La Palma de Nicoya, Costa Rica).—TACZANOWSKI, Orn. du Pérou, iii, 1886, 106.—SALVIN, Ibis, 1886, 60 (Bartica Grove and Camacusa, Brit. Guiana).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Costa Rica).—BERLEPSCH, Zeitschr. Orn., 1887, 185 (Bogota, Colombia).—RIKER and CHAPMAN, Auk, viii, 1891, 158 (Santarem).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 62 (Trinidad).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 478, part (Lion Hill, Panama; Turbo, Colombia; La Palma de Nicoya, Costa Rica; Guiana; Amazonia; Brazil).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 17 (Lion Hill, Panama; crit.).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 104 (Altigracia, etc., Venezuela).—IHERING, Rev. Mus. Paulista, vi, 1904, 358 (Iguapé, Sao Paulo, s. Brazil; crit.).—HAGEMANN, Zool. Jahrb., 1907, 35 (Mexiana I.).—BEEBE, Zoologica, i, 1909, 84 (Rio San Juan, Rio Guarapiche, and Caño Guanoco, n. e. Venezuela).
- [*Ceryle*] *superciliosa* BONAPARTE, Consp. Av., i, 1850, 160.—GRAY, Hand-list, i, 1869, 98, no. 1193, part.—PELZELN, Orn. Bras., iv, Abth., 1871, 404.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.—SHARPE, Hand-list, ii, 1900, 50.
- Ceryle superciliosa superciliosa* HELLMAYR, Novit. Zool., xiii, 1906, 41 (Seelet, Caroni Swamp, and Chaguaramas, Trinidad; crit.); xiv, 1907, 84 (Teffé, Brazil; crit.), 402 (Humaytha, Rio Madeira, Brazil; crit.).
- [*Chloroceryle*] *superciliosa* REICHENBACH, Handb., Alced., 1851, 28, pl. 415, figs. 3122-3124.—CABANIS and HEINE, Mus. Hein., ii, 1860, 146 (Guiana).
- Chloroceryle superciliosa* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 308.—CABANIS, Journ. für Orn., 1861, 256 (Costa Rica).—SCLATER, Cat. Am. Birds 1862, 265 (Trinidad; Cayenne).—TAYLOR, Ibis, 1864, 88 (Caroni R., Trinidad).

[*Chloroceryle*] *superciliosa* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 164 (Guiana).

[*Amazonis*] *superciliosa* BONAPARTE, Ateneo Italiano, ii, 1854, 320 (Consp. Volucr. Anisod., 1854, 10).

[*Ceryle*] *stictoptera* (not *C. superciliosa stictoptera* Ridgway) SHARPE, Hand-list, ii, 1900, 50, part (Panama).

*Ceryle superciliosa stictoptera* (not of Ridgway) BANGS, Auk, xviii, 1901, 359 (Divala, Panama).

### CHLOROCERYLE ÆNEA STICTOPTERA (Ridgway).

#### SCHOTT'S KINGFISHER.

Similar to *C. æ. ænea* but slightly larger, with buff or white spots on secondaries much larger, forming distinct bands across closed wing, and with concealed portion of feathers of back, rump, and upper tail-coverts extensively white.

*Adult male*.—Length (skins), 131–140 (136); wing, 57.5–59 (58.3); tail, 35–39.5 (37.1); culmen, 30.5–34 (32.4); tarsus, 7–8 (7.4); middle toe, 8.5–9 (8.9).<sup>a</sup>

*Adult female*.—Length (skins), 122.5–144.5 (133); wing, 60; tail, 34–39 (36.5); culmen, 30–34.5 (32); tarsus, 7.5–8 (7.7); middle toe, 9–9.5 (9.2).<sup>b</sup>

Southern Mexico, in States of Vera Cruz (San Andrés Tuxtla; Playa Vicente; Buena Vista; Pasa Nueva), Oaxaca (Santa Efigénia; Omealca; Chimalapa), Yucatan (Sisal; Rio Lagartos; Cozumel Island), Campeche (Jaina), and Chiapas (Huehuetán), and southward through Guatemala (Lake Petén; mouth of Rio Salamá; Choctum; Santa Cruz; San José), Honduras (San Pedro; Julián), and Nicaragua (Rio Escondido; Grenada) to northeastern Costa Rica (Rio Frio).

*Ceryle superciliosa* (not *Alcedo superciliosa* Linnæus) SCLATER, Proc. Zool. Soc. Lond., 1857, 227 (San Andres Tuxtla, Vera Cruz; crit.); 1859, 387 (Playa Vicente, Vera Cruz).—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Lake Peten, Guatemala).—SCLATER and SALVIN, Ibis, 1859, 131 (Pacific coast distr., Guatemala; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 204 (Sisal, Yucatan); Bull. U. S. Nat. Mus., no. 4, 1876, 30 (Santa Efigenia, Oaxaca).—SUMCHRAST, Mem. Bost. Soc. N. H., i, 1869, 560 (tierra caliente of Vera Cruz).—BOUCARD, Liste Ois. récol. Guat., 1878, 26 (Guatemala); Proc. Zool. Soc. Lond., 1883, 453 (Rio Lagartos, Yucatan).—SALVIN, Ibis, 1889, 371 (Cozumel I., Yucatan); 1890, 88 (Cozumel I.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 478, part (Uvero, etc., Vera Cruz; Omealca, Chimalapa, etc., Oaxaca; Sisal, etc., Yucatan; Peten, Choctum, and mouth of Rio Salama, Guatemala; San Pedro, Honduras; Rio Escondido, Nicaragua; Rio Frio, Costa Rica).—LANTZ, Trans. Kansas Ac. Sci. for 1896–97 (1899), 220 (San José, Guatemala).

[*Ceryle*] *superciliosa* GRAY, Hand-list, i, 1869, 98, no. 1193, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.

[*Chloroceryle*] *superciliosa* SCLATER, Proc. Zool. Soc. Lond., 1864, 176 ("City of Mexico"—error).

<sup>a</sup> Seven specimens.

<sup>b</sup> Three specimens.

*Ceryle superciliosa stictoptera* RIDGWAY, Proc. Biol. Soc. Wash., ii, 1905 (pub. April 10, 1884), 95 (Sisal, Yucatan; coll. U. S. Nat. Mus.); Proc. U. S. Nat. Mus., xiv, 1891, 471 (Honduras).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 511 (Rio Escondido, Nicaragua; Rio Frio, n. Costa Rica).

[*Ceryle*] *superciliosa stictoptera* BANGS, Proc. New Engl. Zool. Club, ii, 1900, 17, in text (crit.).

[*Ceryle superciliosa*.] Subsp. *a. Ceryle stictoptera* SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 139, part, pl. 5, fig. 2 (Chimalapa, Oaxaca; Choctum, etc., Guatemala; Cozumel I.).

*Ceryle anea stictoptera* DEARBORN, Pub. 125, Field Mus. N. H., Nov., 1907, 90 (San José, Guatemala).

[*Ceryle*] *stictoptera* SHARPE, Hand-list, ii, 1900, 50, part.

### Superfamily TODI.

#### THE TODIES.

> *Todi* FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567 (includes Momoti).

> *Momotidæ* GADOW, in Bronn's Thier-Reich, Vög., ii, 1893, 229, 331 (includes Momoti).

= *Todi* SHARPE, Rev. Classif. Birds, 1891, 81; Hand-list, ii, 1900, 78.

Synpelmous, anisodactyle Coraciiformes with myological formula AXY, metasternal notches open, cæca present, oil-gland tufted, tomia minutely serrated, and primaries 9–10.

Palate imperfectly desmognathous; nares holorhinal, impervious; basipterygoid processes and vomer absent; cervical vertebræ 15; metasternum 4-notched, the notches all open posteriorly; spina externa sterni present, spina interna absent; manubrium sterni with tendency to bifurcation; syrinx tracheo-bronchial; two carotid arteries; cæca present, large; flexor tendons of type Vb, the hallux connected with the flexor perforans digitorum; intestinal convolutions of type VI; myological formula AXY; expansor secundariorum and accessory semitendinosus muscles present; spinal pterygia well defined on neck, not forked on back (no dorsal apterium); oil-gland tufted; adult downs absent; primaries 9–10; rectrices 12.

### Family TODIDÆ.

#### THE TODIES.

< *Todidæ* VIGORS, Zool. Journ., ii, Oct., 1825, 393 (includes *Eurylaimus*, etc.).

= *Todidæ* SCLATER, Cat. Am. Birds, 1862, 263; This, 1872, 180.—BRYANT, Proc. Bost. Soc. N. H., x, 1866, 250.—GRAY, Hand-list, i, 1869, 79.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 395, 399, in text.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1354, 1567.—BEDDARD, Struct. and Classif. Birds, 1898, 213.—SHARPE, Hand-list, ii, 1900, 78.

< *Todinae* CARUS and GERSTAECKER, Handb. Zool., i, 1868, 265 (includes *Platy-rhynchus*, *Triccus*, *Euscarthmus*, *Colopterus*, and *Cyanotis*).

= *Todinae* BONAPARTE, Consp. Av., i, 1850, 182.—GRAY, Hand-list, i, 1869, 79.—GADOW, Bronn's Thier-Reich, Vög., ii, 1891, 230, 301.

The characters of this family are the same as those of the superfamily Todi, as given above.



The Todies are very small Kingfisher-like birds with a long, flattened, instead of compressed, bill, minutely serrated along the edges, and a peculiar coloration—bright grass-green above, whitish beneath, with a bright red throat. In habits they are flycatchers, snapping up insects on the wing, then returning to the perch and sitting quietly, with head drawn in, the beak pointing upward, patiently awaiting the near approach of another victim. In their nesting habits, however, they resemble the Kingfishers and Motmots, depositing their pure white eggs in holes which they dig in banks of ravines or ditches.

They are peculiar to the Greater Antilles, one species being found in Cuba, two in Haiti, one in Jamaica, one in Porto Rico, and another of unknown habitat. They are general favorites with the natives on account of their excessive tameness and pretty plumage, the Jamaican species being known to the inhabitants as "Robin Redbreast."

Genus *TODUS* Brisson.

*Todus* BRISSON, Orn., iv, 1760, 518. (Type, *Alcedo todus* Linnæus.)

In addition to the characters already given under the heading of Family Todidæ the following may be mentioned:

Very small Anisodactyle Coraciiformes (length about 87–110 mm.) with the much flattened bill nearly half as long as wing, color of upper parts bright green, and throat bright red.

Bill as long as or longer than head (nearly half as long as wing), straight, much depressed (its width at nostrils half as much again as depth at same point), in vertical profile gradually tapering terminally, with tip more or less broadly rounded; culmen distinctly ridged, straight for basal half or more, slightly decurved terminally, the tip of maxilla slightly decurved but not uncinat; gonys nearly to quite twice as long as mandibular rami, nearly straight, very broadly rounded; tomia (especially that of mandible) minutely serrate; maxillary tomium without trace of subterminal notch, not deflected basally. Nostril rather large, broadly longitudinally oval, in anterior end of the rather large nasal fossa. Latero-frontal and rictal regions with long and strong antrorse or divaricate bristles, these with distinct lateral barbules in some species, the chin with similar but much smaller bristles; head completely feathered. Wing rather short, much rounded, with fifth to eighth (usually seventh and eighth) primaries longest, ninth shorter than fifth (sometimes shorter than fourth), the tenth (outermost) nearly to more than three-fourths as long as longest. Tail two-thirds to nearly three-fourths as long as wing, slightly rounded, the rectrices rather narrow, with broadly rounded tip. Tarsus nearly as long to decidedly longer than length of bill from nostril, decidedly longer than middle toe with

claw, very slender, the acrotarsium "booted" (nonscutellate); toes very slender, much compressed, the middle and outer of nearly equal length (the outer slightly shorter) and united as far as penultimate articulation of outer toe; inner toe much shorter, united to middle toe as far as its penultimate articulation; hallux about as long as inner toe; claws rather large, strongly curved, acute.

*Coloration*.—Above uniform bright green; throat bright red (the feathers narrowly tipped or margined with paler), the remaining under parts whitish or pale yellowish medially, suffused with pink or red, or deeper yellow, laterally. Sexes alike. Young without red on throat and with chest striped with dusky gray.

*Range*.—Greater Antilles (Cuba, Haiti, Jamaica, and Porto Rico). (Six species.)

KEY TO THE SPECIES OF *TODUS*.

- a. Flanks with more or less of red.
  - b. Subauricular area blue; forehead and lores yellowish. (Cuba, including Isle of Pines.).....***Todus multicolor*** (p. 443).
  - bb. Subauricular area gray; forehead and lores not yellowish.
    - c. Lores and malar streak light red or pinkish; edge of wing pink; upper parts bluish green; under wing-coverts ochraceous-buff; under parts of body strongly suffused with red. (Jamaica?).....***Todus pulcherrimus*** (p. 445).
    - cc. Lores green, like forehead and rest of upper parts; malar streak white; edge of wing pale yellow or yellowish white, under wing-coverts light yellow; under parts of body not strongly, if at all, suffused with red (except on flanks).
      - d. Abdomen white; chest white medially; bill very narrow (width at nostrils not exceeding 5, averaging less than 4.5, mm.); tarsus longer, averaging more than 14 mm. (Haiti.).....***Todus angustirostris*** (p. 445).
      - dd. Abdomen more or less strongly yellowish; chest grayish or greenish, sometimes streaked or suffused with red; bill broader (width at nostril exceeding 5 mm.); tarsus shorter, averaging less than 14 mm.
        - e. Chest grayish or dull yellowish, usually more or less streaked or suffused with pink; abdomen yellowish white to creamy yellow; larger (wing 47–53, averaging more than 49; culmen 18–22, averaging more than 19). (Haiti.).....***Todus subulatus*** (p. 447).
        - ee. Chest more or less strongly washed with green, never streaked or suffused with pink; abdomen deep sulphur yellow; smaller (wing 44.5–48.5, averaging less than 47; culmen 16.5–20, averaging much less than 19). (Jamaica.).....***Todus todus*** (p. 448).
- aa. Flanks wholly yellow. (Porto Rico.).....***Todus mexicanus*** (p. 449).

***TODUS MULTICOLOR* Gould.****CUBAN TODY.**

*Adults (sexes alike)*.—Above plain clear green (nearly grass green or parrot green), very slightly darker and duller on pileum, much brighter on superciliary, auricular, and suborbital regions; lores and anterior portion of forehead yellow (citron to nearly saffron yellow); subauricular region light blue (dull turquoise to nearly

cærulean blue); malar stripe, chin, and lower foreneck white; throat soft geranium red, the feathers narrowly tipped with silvery white; under parts of body mostly white, the chest usually faintly shaded with pale purplish gray, the sides of breast strongly shaded with darker bluish gray (sometimes uniform bluish gray or grayish blue); flanks soft geranium pink, this color sometimes tinging entire sides; under tail-coverts bright sulphur yellow; axillars and under wing-coverts lighter sulphur yellow, the edge of wing white; maxilla light horn brown to nearly black; mandible pale brown or brownish white (pink or yellow in life?); legs and feet brownish (in dried skins).

*Adult male*.—Length (skins), 87–98 (93); wing, 42–46 (43.9); tail, 27–32 (29.7); exposed culmen, 16–19 (17.3); tarsus, 12.5–14.5 (13.5); middle toe, 8–9 (8.4).<sup>a</sup>

*Adult female*.—Length (skins), 87–96 (92); wing, 41–45 (42.8); tail, 26–29.5 (28.4); exposed culmen, 16–18.5 (17.5); tarsus, 12.5–14 (13.3); middle toe, 7.5–9 (8.3).<sup>b</sup>

Island of Cuba (San Diego de los Baños, Trinidad, El Guamá, San Cristóbal, Cabañas, Batabano, and near Palácios, western Cuba; El Cobre, Guamá, San Luís, Monte Verde, Figuabas, Santiago, and Guantánamo, eastern Cuba; Nuevo Gerona, Calle Bonita, and Santa Fé, Isle of Pines).

(?) *Todus viridis* (not of Linnæus) VIEILLOT, Nouv. Dict. d'Hist. Nat., xxxiv, 1819, 184, part.

*Todus multicolor* GOULD, Icones Avium, 1837, pl. 2.—D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Ois., 1839, 132, pl. 22.—GRAY, List Fissirostral Birds Brit. Mus., 1848, 36.—BONAPARTE, Consp. Av., i, 1850, 182.—GUNDLACH, Journ. für Orn., 1856, 101 (habits); 1859, 347; 1861, 414 (descr. nest and eggs); 1862, 189; 1871, 288, 293; 1874, 146 (habits); Repert. Fisico-Nat. Cuba, i, 1866, 293; Orn. Cubana, ed. 1895, 135.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 307.—SCHLEGEL, Mus. Pays-Bas, iii, no. 10, 1863, 8, part (Cuba).—SHARPE, Ibis, 1874, 353 (monogr.); Cat. Birds Brit. Mus., xvii, 1892, 335 (San Cristóbal, Cuba).—CORY, Auk., iii, 1886, 372 (descr.; synonymy); Birds West Ind., 1889, 167; Cat. West Ind. Birds, 1892, 12, 103, 128 (Cuba;

<sup>a</sup> Twenty-four specimens.

<sup>b</sup> Eighteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Nine adult males from western Cuba.....	44.2	29.1	17.6	13.6	8.5
Six adult males from eastern Cuba.....	42.6	28.7	17.2	13.2	8.2
Nine adult males from Isle of Pines.....	44.5	31	17.2	13.7	8.4
FEMALES.					
Ten adult females from western Cuba.....	43.1	28.5	17.7	13.2	8.4
Six adult females from eastern Cuba.....	42.2	28.2	17.3	13.2	8.2
Two adult females from Isle of Pines.....	43.2	28	16.7	14	8.2

I am not able to detect any color differences in the three series.



Isle of Pines).—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 300 (near Trinidad, Cuba; habits).—BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 201 (Isle of Pines).—MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 23 (Figuabas, e. Cuba).

[*Todus*] *multicolor* GUNDLACH, Journ. für Orn., 1861, 334.—GRAY, Hand-list, i, 1869, 79, no. 927.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—CORY, List Birds West Ind., 1885, 19.

*Todus portoricensis* LESSON, Ann. Sci. Nat., xi, 1838, 167 (Porto Rico; error); Compl. Buffon, 1847, 263.—LAFRESNAYE, Rev. Zool., 1847, 332.—LEMBEYE, Aves de la Isla de Cuba, 1850, 131.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 307.

[*Todus*] *portoricensis* GRAY, Gen. Birds, i, 1847, 63.

### TODUS PULCHERRIMUS Sharpe.

#### SHARPE'S TODY.

*Adult*.—Above bluish green, rather tinged with olive on the lower back, the wing-coverts showing a very strongly pronounced blue shade; quills blackish, bordered narrowly with light green, shading off into bluish toward the tips of the secondaries; tail dull greenish, with narrow margins of bluish green; forehead lighter and rather more olive-green than the back, and tinged with orange near the base of the beak; lores tinged with orange; sides of the face yellowish green; sides of neck dull rufous; chin white; throat bright carmine, with silver-white margins to most of the feathers; rest of under surface with a slight crimson blush, varied on the breast with white oval spots to the feathers, producing an ocellated appearance, the crimson color brightest on the flanks, shading off into ochraceous buff on the sides of the vent; on each side of the upper breast a patch of greenish; under wing-coverts ochraceous buff, the outermost smaller coverts washed with pale carmine; upper mandible blackish, lower one yellowish; feet black. Total length 3.5 inches, culmen 0.85, wing 1.9, tail 1.4, tarsus 0.65.

“*Hab.*—[Jamaica.]”<sup>a</sup>

I have not seen a specimen corresponding to the above description. If not really a distinct species, the type may possibly represent an extreme variation of the very variable *T. subulatus*.

*Todus pulcherrimus* SHARPE, Ibis, 3rd ser., iv, Oct., 1874, 353, pl. 13, fig. 3 (Jamaica?; coll. Brit. Mus.); Cat. Birds Brit. Mus., xvii, 1892, 336.—CORY, Auk, iii, 1886, 371 (descr.; synonymy); Birds West Ind., 1889, 166; Cat. West Ind. Birds, 1892, 12, 103, 130, 142.—SCOTT, Auk, ix, 1892, 275.

[*Todus*] *pulcherrimus* CORY, List Birds West Ind., 1885, 19.

### TODUS ANGUSTIROSTRIS Lafresnaye.

#### NARROW-BILLED TODY.

*Adults (sexes alike)*.—Above plain parrot green, very slightly darker on crown, decidedly brighter (approaching emerald green) on orbital

<sup>a</sup> Sharpe, Cat. Birds Brit. Mus., xvii, 1892, 336.

region and anterior portion of forehead; margin of chin and most of malar region white; rest of chin, together with whole throat deep carmine red,<sup>a</sup> most of the feathers with a minute terminal dot of white; sides of foreneck and chest and posterior portion of malar region deep bluish gray (plumbeous); median portion of foreneck and chest, breast, and abdomen white, the chest sometimes faintly tinged with gray; flanks mostly clear geranium red or deep geranium pink; under tail-coverts, axillars, and under wing-coverts clear sulphur yellow; maxilla black, becoming more brownish terminally; mandible pale brownish basally (red or pink in life?), dusky terminally; iris white;<sup>b</sup> legs and feet dark brownish (in dried skins).

*Adult male*.—Length (skins), 96–103 (100); wing, 43.5–46 (45.3); tail, 32.5–35.5 (34); exposed culmen, 17.5–18.5 (18.1); width of bill at nostrils, 4–5 (4.4); tarsus, 13.5–15 (14.3); middle toe, 8–9 (8.7).<sup>c</sup>

*Adult female*.—Length (skins), 89–99 (95.8); wing, 42–45.5 (43.9); tail, 31–35 (32.5); exposed culmen, 16.5–19 (17.6); width of bill at nostrils, 4–4.5 (4.2); tarsus, 13.5–15 (14.1); middle toe, 8–9 (8.6).<sup>d</sup>

This exceedingly distinct species (so strangely synonymized with *T. subulatus* by most authors) most nearly resembles *T. multicolor* in the whiteness of the under parts, which, however, are never streaked or suffused with pink as is often the case in the latter; but it differs from *T. multicolor* in absence of the blue subauricular area (which is clear gray) and in the bright green lores and forehead, and from all the other species in the very deep red color of the throat, “solid” pinkish red flank patch, and very narrow bill. It *least* resembles *T. subulatus*, with which it seems to occur throughout its range, at least in the Santo Domingo portion of the island.

Island of Haiti (Sanchez, Aguacate, Catare, El Valle, La Vega, Puerto Plata, Puerto Resoli, and Santo Domingo City, Santo Domingo).

*Todus angustirostris* LAFRESNAYE, Rev. et Mag. de Zool., ser. 2, iii, Oct., 1851, 478 (Santo Domingo).—SALLÉ, Proc. Zool. Soc. Lond., 1857, 233.—BRYANT, Proc. Bost. Soc. N. H., xi, 1866, 91.—SHARPE, Ibis, 1874, 352.—CORY, Birds Haiti and San Dom., 1885, 107, pl. (23), fig. 4; Auk, iii, 1886, 369 (descr.; synonymy); Birds West Ind., 1889, 164.—CHERRIE, Contr. Orn. San Dom., 1896, 20.

*Todus subulatus angustirostris* CORY, Cat. West Ind. Birds, 1892, 103, 131.

*Subulatus angustirostris* CORY, Cat. West Ind. Birds, 1892, 11.

*Todus subulatus* (not of Gray) SHARPE, Ibis, 1874, 351, part, pl. 13, fig. 2; Cat. Birds Brit. Mus., xvii, 1892, 334, part.

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<sup>a</sup> The red of the throat is much deeper in this than in any other species.

<sup>b</sup> A. H. Verrill, manuscript.

<sup>c</sup> Ten specimens.

<sup>d</sup> Nine specimens.

## TODUS SUBULATUS Gray.

## HAITIAN TODY.

*Adults (sexes alike).*—Above, including sides of head, plain green (varying from grass green or parrot green to a much brighter hue); a malar stripe of dull white, passing into gray posteriorly; chin dull white; throat soft geranium red, the feathers narrowly tipped with silvery white; lower foreneck dull white; under parts of body whitish or pale sulphur yellow medially, the chest usually faintly shaded with pale yellowish gray, the sides and flanks mostly soft geranium pink (the chest also often touched with pink); under tail-coverts bright sulphur yellow; axillars and under wing-coverts light sulphur yellow, the edge of wing yellowish white; maxilla horn brown to nearly black, mandible brownish white (pink or yellow in life); iris brown; legs and feet dusky brown (in dried skins).

*Young.*—Upper parts as in adults; malar region pale dull grayish buffy or dull yellowish white, the chin similar but more grayish; throat pale yellowish buffy, slightly tinged with red; rest of under parts yellowish white, the chest broadly streaked, or striped, with dusky gray, the under tail-coverts more yellowish, tinged with green.

*Adult male.*—Length (skins), 102–113 (107); wing, 47.5–53 (50); tail, 33–37 (35.4); exposed culmen, 18.5–22 (20.5); width of bill at nostril, 5.5–6 (5.8); tarsus, 13–14.5 (13.8); middle toe 8.5–10 (9.1).<sup>a</sup>

*Adult female.*—Length (skins), 101–113 (108); wing, 47–51.5 (49.2); tail, 33.5–38 (35.5); exposed culmen, 18–21 (19.7); width of bill at nostrils, 5.5–6 (5.7); tarsus, 13–14.5 (13.8); middle toe, 8.5–9.5 (8.7).<sup>a</sup>

Island of Haiti (Port au Prince, Le Coup, and Jeremie, Haiti; Maniél, Honduras, San Cristóbal, Puerto Plata, Samaná, Sanchez, Caña Honda, El Valle, La Canita, and San Francisco, Santo Domingo).

*Todus viridis* (not of Linnæus) VIEILLOT, Ois. Am. Sept., i, 1807, 87, 56; Nouv. Dict. d'Hist. Nat., xxxiv, 1819, 184, part, pl. 29, fig. 4 (Santo Domingo).—BONNATERRE and VIEILLOT, Enc. Méth., i, 1823, 269.

*[Todus] subulatus* GRAY, Gen. Birds, i, April, 1847, 63.

*Todus subulatus* GRAY, Gen. Birds, i, 1847, pl. 22.—BONAPARTE, Consp. Av., i, 1850, 182.—SCHLEGEL, Mus. Pays-Bas, iii, no. 19, 1863, 8.—SHARPE, Ibis, 1874, 351, part, pl. 13, fig. 1; Cat. Birds Brit. Mus., xvii, 1892, 334, part (Puerto Plata, Santo Domingo; Haiti; excl. syn. *angustirostris*).—TRISTRAM, Ibis, 1884, 168 (Santo Domingo).—CORY, Auk, iii, 1886, 370; Birds West Ind., 1889, 165; Cat. West Ind. Birds, 1892, 11, 103, 131.—CHERRIE, Contr. Orn. San Dom., 1896, 20 (habits).—CHRISTY, Ibis, 1897, 332 (habits).

*[Todus] subulatus* GRAY, Hand-list, i, 1869, 79, no. 929.—CORY, List Birds West Ind., 1885, 19.

*Todus dominicensis* LAFRESNAYE, Rev. Zool., 1847, 331 (based on *Le Todier de St. Domingue* Daubenton, Pl. Enl., pl. 585, figs. 1, 2).—SALLÉ, Proc. Zool. Soc. Lond., 1857, 233 (habits).—SCLATER, Cat. Am. Birds, 1862, 264.—BRY-

<sup>a</sup> Ten specimens.



ANT, Proc. Bost. Soc. N. H., xi, 1866, 91 (Santo Domingo; crit.).—CORY, Bull. Nutt. Orn. Club, vi, 1881, 154 (Haiti; habits; notes).

*T[odus] dominicensis* CABANIS and HEINE, Mus. Hein., ii, 1859, 49 (Haiti).

*[Todus] dominicensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.

*Todus multicolor* (not of Gould) SCHLEGEL, Mus. Pays-Bas, iii, no. 19, 1863, 8, part (Haiti).

### TODUS TODUS (Linnæus).

#### JAMAICAN TODY.

*Adults (sexes alike).*—Above plain light grass green or parrot green, the sides of head somewhat lighter (approaching paris green); narrow malar stripe and chin white; throat soft geranium red, the feathers narrowly tipped with silvery whitish; rest of under parts dull white or grayish white, suffused with sulphur yellow, especially posteriorly, the under tail-coverts bright sulphur yellow, the breast (at least laterally) tinged with grayish green; flanks streaked or dashed with bright geranium pink; axillars and under wing-coverts bright sulphur yellow, the edge of wing yellowish white; maxilla brown, mandible brownish white (yellow in life?); legs and feet dusky brownish (in dried skins).

*Adult male.*—Length (skins), 99–107 (103); wing, 45–48.5 (46.9); tail, 32.5–36.5 (34.5); exposed culmen, 17–20 (18.1); tarsus, 13–14.5 (13.9); middle toe, 8–9 (8.4).<sup>a</sup>

*Adult female.*—Length (skins), 93–106 (101); wing, 44.5–48.5 (45.9); tail, 32.5–35 (33.7); exposed culmen, 16.5–18 (17.3); tarsus, 13.5–14.5 (14.1); middle toe, 8–9 (8.2).<sup>a</sup>

Island of Jamaica (Kingston; Moneague; St. Andrews; Metcalf Parish; Port Antonio; Port Alexander; Priestmans River).

*[Alcedo] todus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 116 (based on *Rubecula viridis elegantissima* Edwards, Av. p. 121, pl. 121, fig. 1; Sloan, Jam. ii, 306, pl. 263, fig. 1; etc.).

*Todus todus* STEJNEGER, Stand. Nat. Hist., iv, 1885, 399.—RILEY, Auk, xxi, 1904, 486.

*[Todus] viridis* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 178.—GMELIN, Syst. Nat., i, 1788, 443.—LATHAM, Index Orn., i, 1790, 265.—GRAY, Hand-list, i, 1869, 99, no. 925.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—CORY, List Birds West Ind., 1885, 19.

*Todus viridis* TEMMINCK, Cat. Syst., 1807, 71.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xxxiv, 1819, 184, part.—LESSON, Traité d'Orn., 1831, 250; Ann. Sci. Nat., ix, 1838, 166.—SWAINSON, Zool. Illustr., 2d ser., 1833, pl. 66; Mon. Flycatchers, 1838, 173, vignette.—LAFRESNAYE, Mag. de Zool., 3<sup>e</sup> an., 1833, cl. ii, not. xi, pl. 11; Rev. Zool., x, 1847, 332.—GOSSE, Birds Jamaica, 1847, 72; Illustr. Birds Jamaica, 1849, pl. 14.—DENNY, Proc. Zool. Soc. Lond., 1847, 38.—GRAY, List Fissirostr. Birds Brit. Mus., 1848, 351.—BONAPARTE, Consp. Av., i, 1850, 182.—SCLATER, Proc. Zool. Soc. Lond., 1861, 77; Cat. Am. Birds, 1862, 263; Revised List Birds Jam., 1910, 12.—ALBRECHT, Journ. für Orn., 1862, 199.—SUNDEVALL, Av. Met. Nat. Disp. Tent., 1872, 61.—MURIE, Ibis, 1872, 390 (anatomy).—SHARPE, Ibis, 1874, 349 (monogr.);

<sup>a</sup> Ten specimens.

Cat. Birds Brit. Mus., xvii, 1892, 334 (Moneague and Metcalf Parish, Jamaica).—CORY, Auk, iii, 1886, 369 (descr.; synonymy); Birds West Ind., 1889, 164; Cat. West Ind. Birds, 1892, 11, 103, 130.—SCOTT, Auk, ix, 1892, 274, 373 (habits; descr. nest and eggs).—FIELD, Auk, xi, 1894, 124 (Port Alexander, Jamaica; habits; descr. nest and eggs).—NICOLL, Ibis, 1904, 577 (Kingston, Jamaica).

*T[odus] viridis* GRAY, List Gen. Birds, 1840, 9; ed. 1841, 12; Gen. Birds, i, 1847, 63.—NEWTON (A. and E.), Handbook Jamaica, 1881, 109.

### TODUS MEXICANUS Lesson.

#### PORTO RICAN TODAY.

*Adults (sexes alike).*—Above, including sides of head, plain green (nearly grass green or parrot green), slightly more bluish green posteriorly, the sides of head usually brighter and clearer green, especially the superciliary region; chin, malar stripe, and lower foreneck white; throat soft geranium red, the feathers narrowly tipped with silvery white; under parts of body white centrally, passing into sulphur yellow on sides, flanks, and under tail-coverts (the flanks sometimes tinged with orange-yellow), the chest shaded, more or less strongly, with gray; axillars and under wing-coverts sulphur yellow, the edge of wing white; maxilla blackish, usually paler at tip; mandible pale brown or brownish white in dried skins, dull vermilion in life; <sup>a</sup> iris grayish; <sup>a</sup> legs and feet brownish (in dried skins).

*Adult male.*—Length (skins), 89–99 (94); wing, 42.5–45 (43.5); tail, 28–31.5 (29.8); exposed culmen, 18–19.5 (18.8); tarsus, 13–14 (13.4); middle toe, 8–9 (8.5).<sup>b</sup>

*Adult female.*—Length (skins), 92–98 (95); wing, 41–43.5 (42.6); tail, 28–31.5 (29.6); exposed culmen, 17.5–20.5 (18.5); tarsus, 13–13.5 (13.2); middle toe, 8–9 (8.5).<sup>b</sup>

Island of Porto Rico (Mayagüez; El Yunque; Utuado; Caguas).

*Todus viridis* (not of Linnæus) DESMAREST, Hist. Nat. Tang., etc., 1805, pl. 67.—VIEILLOT, Gal. Ois., i, 1825, 198, pl. 124.

*Todus mexicanus* LESSON, Ann. Sci. Nat., 2 ser., ix, 1838, 167 (Vera Cruz and Tampico, Mexico—error!); Compl. Buffon, 1847, 263.—LAFRESNAYE, Rev. Zool., 1847, 333 (“Vera Cruz”).—GRAY, List. Fissirostr. Birds Brit. Mus., 1848, 36.—BONAPARTE, Consp. Av., i, 1850, 182 (“Mexico et America mer.”).—BAIRD, Ibis, 1867, 260.

*T[odus] mexicanus* GRAY, Gen. Birds, i, 1847, 63.

[*Todus*] *mexicanus* GRAY, Hand-list, i, 1869, 79, no. 926.

*Todus hypochondriacus* BRYANT, Proc. Bost. Soc. N. H., xi, Jan. 4, 1866, 39, 249 (Porto Rico); Journ. für Orn., 1866, 183.—SUNDEVALL, Öfv. k. Vet.-Ak. Handl., iv, 1869, 598.—GUNDLACH, Journ. für Orn., 1874, 312; 1878, 160, 180 (crit.; descr. nest and eggs); Anal. Soc. Esp. Hist. Nat., vii, 1878, 219.—CORY, Auk, iii, 1886, 371 (descr.; synonymy); Birds West Ind., 1889, 166; Cat. West Ind. Birds, 1892, 12, 103, 132.

[*Todus*] *hypochondriacus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—CORY, List Birds West Ind., 1885, 19.

<sup>a</sup> C. W. Richmond, manuscript.

<sup>b</sup> Ten specimens.

## Superfamily MOMOTI.

## THE MOTMOTS.

- > *Todi* FUEBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567 (includes *Todi*).  
 > *Momotidae* GADOW, in Bronn's Thier-Reich, Vög., ii, 1893, 229, 301 (includes *Todi*); Classif. Vertebr., 1898, 36.  
 = *Momoti* SHARPE, Rev. Classif. Birds, 1891, 81; Hand-list, ii, 1900, 76.  
 = *Momotinae* GADOW, Bronn's Thier-Reich, Vög., ii, 229, 301.

Synpelmous, anisodactyle Coraciiformes with myological formula AXY, basipterygoid processes and adult downs absent, two carotid arteries, at least two of metasternal notches closed (converted into foramina), cæca absent, oil-gland (if present) nude or tufted, tomia serrated, no spinal apterium, and primaries 11.

Palate desmognathous; nares holorhinal, pervious or impervious; vomer present; cervical vertebræ 15; complete ribs 3-4 pairs; metasternum with 4 foramina or 2 notches and 2 foramina; spina externa sterni present, bifid; spina interna absent; syrinx tracheo-bronchial; tensor patagii brevis muscle present, biceps slip absent; expansor secundariorum muscle present; feet anisodactyle, synpelmous, the hallux connected with the flexor perforans digitorum (flexor tendons of type Vb); intestinal convolutions of type VI, gall-bladder present; spinal pterygia well-defined on neck, not forked on back; aftershaft present; oil gland (if present) may be either nude or tufted; primaries 10; rectrices usually 10 (12 in genus *Momotus*); tomia serrated.

## Family MOMOTIDÆ.

## THE MOTMOTS.

- = *Momotidæ* SCLATER, Proc. Zool. Soc. Lond., 1857, 248; Cat. Am. Birds, 1862, 261.—GRAY, Hand-list, i 1869, 79.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102.—SELYS, Bull. Acad. Roy. Belgique, ser. 2, xlviii, 1879, 773.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 395, 397, in text.—SALVIN and GODMAN, Biol. Centr.-Am., Aves., ii, 1895, 454.—BEDDARD, Struct. and Classif. Birds, 1898, 210.—FUEBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1354, 1355, 1567.—SHARPE, Hand-list, ii, 1900, pp. xi, 76.  
 = *Momotinæ* EYTON, Osteol. Av., 1867, 59.—GRAY, Hand-list, i, 1869, 79.—GADOW, Bronn's Thier-Reich, Vög., ii, 1891, 229, 301.  
 = *Prionitidae* BONAPARTE, Prodr. Syst. Orn., 1840, 6; Consp. Av., i, 1850, 164.—CABANIS and HEINE, Mus. Hein., ii, 1860, 112.  
 = *Prionitinae* BONAPARTE, Prodr. Syst. Orn., 1840, 6.—CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 342.—SUNDEVAL, Met. Nat. Av. Disp. Tent., ii, 1873, 94 (English translation, 1889, 175).

The principal anatomical and a few of the external characters of this family have been given above under the heading of superfamily Momoti. Additional external characters are as follows:

Bill about as long as head, more or less (though sometimes very slightly) decurved terminally, very variable as to relative width and depth, the culmen indistinctly ridged to distinctly carinate; tomia



distinctly serrate for a greater or less extent of their middle portion, sometimes for whole length, except basally; tip of maxilla distinctly decurved, but maxillary tomium without notch; gonys much less than twice as long as mandibular rami. Nostril exposed, large, obliquely broadly oval, in anterior end of nasal fossa, or (in genus *Electron*) relatively much smaller and nearly circular. No post-nasal bristles but rictal bristles distinct, those of the malar apex strongly developed, the chin also, sometimes, with recurved bristles; head completely feathered, the feathers of the auricular region (sometimes also those of superciliary region and middle line of throat elongated; usually a small tuft of elongated black feathers in middle of foreneck or upper chest. Wing short, much rounded, the fifth, sixth, and seventh, or sixth and seventh, primaries longest, ninth shorter than fourth (often shorter than second), the tenth (outermost)<sup>a</sup> a little less to decidedly more than two-thirds as long as ninth. Tail variable as to relative length (a little shorter than wing to nearly twice as long), excessively graduated, the middle pair of rectrices much longer than the next, and often with the webs interrupted or denuded subterminally, producing a spatulate or racquet-shaped tip, all the rectrices with tip broadly rounded; rectrices usually 10 (12 in *Momotus* only). Tarsus nearly as long as middle toe with claw to decidedly longer, shorter than culmen, distinctly and regularly scutellate anteriorly, the plantar scutella variable (one to three rows, or irregular); outer toe nearly as long as middle toe, united to the latter as far as its penultimate articulation; inner toe much shorter, reaching (without claw) only to penultimate articulation of middle toe, united to the latter for entire length of its first phalanx; hallux decidedly shorter than inner toe; soles of toes broad and flattened, the surface distinctly granulated; claws moderate in size and curvature, the middle one with inner edge expanded but not pectinated. Coloration mostly green above, often with blue on pileum, but oftener with the latter rufescent; auricular tufts and tuft on lower foreneck black or blue and black.

The Motmots are most nearly related to the Todies (Family Todidæ), from which they differ externally in their much greater size, relatively longer and excessively graduated tail, distinctly curved bill, relatively much shorter and distinctly scutellate tarsus, and very different coloration, the prevailing colors being plain olive-green, or olive-green and rusty, varied, usually, with blue and black markings on the head or chest, or both, the under parts never party red nor white, as in the Todies.

They are forest birds of solitary habits, seldom more than a pair being found together. Much of their time is spent perching stupidly

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<sup>a</sup> Although the Momotidæ are said to possess 11 primaries, I have not been able to find more than 10 in any of the 7 genera.

on branches of trees, whence the Spanish vernacular name *Bobo* (fool). Their food consists chiefly of insects, small reptiles, and fruits, but in captivity they are said to become decidedly omnivorous, even small birds, mice, cockroaches, and other living creatures, as well as bread, raw meat, and various fruits being equally acceptable to them. Like their near allies the Kingfishers and Todies, the Momots excavate holes in the banks of streams and lay therein their glossy pure white eggs, though some species frequent also caves or other natural openings among rocks.

The Momotidæ are peculiar to continental Tropical America, and embrace about 18 species, belonging to 7 genera, of which 6 genera and 12 species occur in the area from Panama northward.

#### KEY TO THE GENERA OF MOMOTIDÆ.

- a. Bill compressed (deeper than wide at nostrils), the tomia more coarsely serrate.
  - b. Rectrices 12.....**Momotus** (p. 453).
  - bb. Rectrices 10.
    - c. Tomial serrations much larger, most distinct on anterior half of tomia; tarsus much longer than middle toe with claw; middle pair of rectrices (normally) with webs denuded subterminally and with racquet-shaped tip (as in *Momotus*).....**Urospatha** (p. 467).
    - cc. Tomial serrations much smaller, obsolete on anterior half of tomia; tarsus not longer than middle toe with claw; middle pair of rectrices always with webs continuous (normal).....**Baryphthengus** (extralimital).<sup>a</sup>
- aa. Bill depressed (wider than deep at nostrils), the tomia more finely serrate.
  - b. Culmen strongly carinate, the adjacent sides of maxilla distinctly depressed or concave; bill more strongly decurved, as long as head; tarsus much less than one-fourth as long as wing; middle pair of rectrices with webs denuded or at least contracted subterminally.
    - c. Bill broader, its width at nostrils equal to nearly half the distance from nostril to tip of maxilla; tarsus one-sixth as long as wing; middle rectrices only one-third longer than next pair, the denuded portion shorter than commissure, the terminal "racquet" small (shorter than culmen); no superciliary tufts nor narrow, brightly colored, feathers on throat.....**Electron** (p. 470).
    - cc. Bill narrower, its width at nostrils much less than half the distance from nostril to tip of maxilla; tarsus more than one-fifth as long as wing; middle rectrices nearly twice as long as next pair, the denuded portion much longer than commissure, the terminal "racquet" very large (much longer than culmen); conspicuous superciliary tufts, and narrow, brightly colored, feathers on throat.....**Eumomota** (p. 476).
  - bb. Culmen not carinate (though indistinctly ridged), the adjacent sides of maxilla not depressed or concave; bill less decurved, shorter than head; tarsus nearly to quite one-fourth as long as wing; middle pair of rectrices with webs continuous (normal).
  - c. Tail much longer than wing, the lateral rectrices less than one-third as long as middle pair, the latter exceeding next pair by more than length of culmen;

<sup>a</sup> *Baryphthengus* Cabanis and Heine, Mus. Hein., ii, Dec., 1859, 114. (Type, *Baryphonus ruficapillus* Vieillot.)

Southern Brazil. (Monotypic.) Very distinct from *Urospatha*, with which it is united by some authorities.

feathers of upper throat normal (not elongated); a black jugular tuft (as in all other genera except *Hylomanes*); much larger (length about 250 mm.).

*Aspatha* (p. 482).

- cc. Tail shorter than wing, the lateral rectrices more than one-third as long as middle pair, the latter exceeding next pair by less than one-third the length of exposed culmen; feathers of upper throat elongated; no black jugular tuft; much smaller (length much less than 200 mm.). .*Hylomanes* (p. 484).

### Genus MOMOTUS Brisson.

*Momotus* BRISSON, Orn., iv, 1760, 465. (Type, *Ramphastos momota* Linnæus.)

*Prionites* ILLIGER, Prodrum Orn., 1811, 224. (Type, *Ramphastos momota* Linnæus.)

*Prionitis* (emendation) VOIGT, Thierreich, i, 1831, 660.

*Baryphonus* VIEILLOT, Analyse, 1816, 48. (Type, *Momot* Buffon = *Ramphastos momota* Linnæus.)

*Barryphonus* <sup>a</sup> (emendation?) VIEILLOT, Analyse, 1816, 69.

*Crybelus* <sup>b</sup> CABANIS and HEINE, Mus. Hein., ii, Nov. 26, 1859, 112. (Type, *Momotus mexicanus* Swainson.)

Medium-sized to large Momotidæ (length about 285–460 mm.) with twelve rectrices, the middle pair (normally) with webs denuded subterminally and tip racquet-shaped.

Bill about as long as to decidedly shorter than head, distinctly decurved, deeper than broad at nostrils; culmen indistinctly to rather distinctly ridged, more or less distinctly convex from base, more strongly decurved terminally, the tip of maxilla usually distinctly produced (subuncinate); sides of maxilla next to culmen rounded (flush with general surface); gonys much less than twice as long as mandibular rami, broadly rounded, more or less convex and prominent basally, faintly concave terminally, the tip of mandible slightly decurved; tomia very strongly and rather coarsely serrate, except for terminal and basal portions. Nostril mostly exposed, rather large, obliquely broadly oval, in anterior end of nasal fossa. No prefrontal (postnasal) antrorse bristles; rictal bristles distinct but rather small; malar apex with larger and stronger antrorse bristles, and feathers of chin with slender, recurved, bristly tips. Head completely feathered, the auricular feathers elongated, rather stiff, forming a conspicuous pointed tuft. Wing rather short, the longest primaries exceeding longest secondaries by about half the length of exposed culmen; fifth, sixth, and seventh primaries longest, the eighth either shorter or longer than fourth, the ninth equal to first or second, the tenth (outermost) a little more than two-thirds as long as ninth. Tail much longer than wing (one-third to more than one-half longer), excessively graduated, the middle pair of rectrices much longer than the next pair, usually with webs denuded for a considerable distance, the tip racquet-shaped; rectrices twelve, the outer pair a little more

<sup>a</sup> *βαρύφωνος*, cui vox est gravis. (Vieillot.)

<sup>b</sup> “*Ὁν κρύβηλος* = *κρυπτικός*.” (Cabanis and Heine.)



than half as long as the next and mostly concealed by the under tail-coverts. Tarsus decidedly longer than middle toe with claw, decidedly to very slightly shorter than distance from nostril to tip of maxilla.

*Coloration*.—Prevailing color plain green or olive-green, more bluish on terminal portion of tail and on primaries, the under parts sometimes more rufescent; pileum bright blue (with or without a black central spot and external cincture) or (together with hindneck) wholly rufescent; auricular tuft and narrow jugular tuft black, sometimes edges with blue.

*Range*.—Mexico to eastern Peru, Bolivia, south-central Brazil, Cayenne, Trinidad, and Tobago. (About seventeen species and subspecies.)

KEY TO THE SPECIES AND SUBSPECIES OF *MOMOTUS*.<sup>a</sup>

- a. Pileum blue (at least exteriorly).
  - b. Pileum wholly blue or greenish blue (without any black central area). (North-eastern Mexico.).....***Momotus coeruliceps*** (p. 455).
  - bb. Pileum with a central area of black.
    - c. Feathers of posterior margin of blue crown-ring tipped with black, forming a more or less distinct black border, the feathers beneath this without admixture of cinnamon-rufous or tawny; posterior under parts greenish; larger (wing 122-151, averaging more than 130). (*Momotus lessonii*.)
    - d. Larger (averaging wing more than 135, tail more than 220, culmen more than 40).
      - e. Smaller and more tawny below; wing averaging 139.5 in male, 135.1 in female; tail 230.5 in male, 220.7 in female; culmen 43.1 in male, 40.9 in female. (State of Chiapas, southern Mexico to western Panama.)  
***Momotus lessonii lessonii*** (p. 457).
      - ee. Larger and with under parts more greenish; wing averaging 142.8 in male, 137.5 in female; tail 235.3 in male, 224.1 in female; culmen 43.1 in male, 42.7 in female. (States of Vera Cruz, Oaxaca, and Tabasco, southeastern Mexico.).....***Momotus lessonii goldmani*** (p. 460).
      - dd. Smaller (wing averaging 129.6 in male, 129.7 in female; tail 215.1 in male, 207.3 in female; culmen 39.2 in male, 38.7 in female). (Yucatan and Campeche.).....***Momotus lessonii exiguus*** (p. 460).
      - cc. Feathers of posterior margin of pileum not tipped with black, the feathers beneath the blue occipital crescent more or less intermixed or suffused with cinnamon-rufous or tawny; posterior under parts rufescent. (*Momotus subrufescens*.)

<sup>a</sup> With the very satisfactory material that has been brought together in connection with the present work the temptation is very great to present a key to all the forms of this genus, since the South American ones are in a state of almost chaotic confusion. There seem to be several South American species, each having two or more subspecies or geographic representative forms the distribution and relationship of which is very imperfectly understood. But lack of time renders it necessary that the task of working out the problems connected with the extralimital forms be left for some one who has the leisure to do so.

- d. Paler, with anterior under parts much less distinctly olivaceous, usually with little if any olivaceous tinge. (Santa Marta district of Colombia to Bogota <sup>a</sup> and eastward to Orinoco Valley, Venezuela.)

**Momotus subrufescens subrufescens** (extralimital).<sup>b</sup>

- dd. Darker, with anterior under parts much more distinctly olivaceous.

- e. Paler; back, etc., clear olive-green, abdomen, etc., clear brownish tawny (between dresden brown and antique brown, the anterior under parts strongly glossed with olive-green. (Eastern Panama to south-central Colombia. <sup>c</sup>).....**Momotus subrufescens conexus** (p. 461).

- ee. Darker; back, etc., dark citrine, abdomen, etc., brussels brown or dull sudan brown, the anterior under parts very slightly glossed with olive-green. (Southeastern Panama.)

**Momotus subrufescens reconditus** (p. 463).

- aa. Pileum cinnamon-rufous or chestnut.

- b. Pileum cinnamon-rufous; black suborbital area bordered beneath by a blue patch or broad streak; lores mixed black and brownish. (*Momotus mexicanus*.)

- c. Averaging smaller and paler (wing averaging 117 in male, 112 in female; tail 141.5 in male, 154.8 in female; culmen 35.9 in male, 37 in female). (Middle Mexico, from Sinaloa, Tepic, and Colima to Mexico and Puebla.)

**Momotus mexicanus mexicanus** (p. 463).

- cc. Averaging larger and darker (wing averaging 122.2 in male, 123.2 in female; tail averaging 170.8 in male, 176 in female; culmen 42 in male, 41.3 in female). (Southwestern Mexico, in States of Guerrero, southern Michoacan, Oaxaca, and Chiapas.).....**Momotus mexicanus saturatus** (p. 465).

- bb. Pileum chestnut; black suborbital area bordered beneath by a streak of greenish white; lores uniform black. (Guatemala)...**Momotus castaneiceps** (p. 466).

## MOMOTUS CÆRULICEPS (Gould).

### BLUE-CROWNED MOTMOT.

Somewhat like *M. lessonii* but crown without any black area (the whole pileum turquoise blue exteriorly, duller, more greenish, blue centrally, light verdigris green anteriorly).

*Adults (sexes alike).*—Pileum dull greenish blue or bluish green, passing into light greenish (light verdigris to chromium or bice green) on forehead and into bright turquoise blue laterally and posteriorly; lores, extreme anterior portion of forehead, orbital region, and auricular region black, this continued from superciliary region backward beneath lateral and posterior margins of the blue pileum, the auricular

<sup>a</sup> Another species, with posterior under parts more greenish than anterior portions (instead of the reverse) is the commoner one in Bogota collections.

<sup>b</sup> *Momotus subrufescens* Sclater, Rev. et Mag. de Zool., v, Nov., 1853, 489 (Santa Marta, Colombia; coll. Brit. Mus.); Sharpe, Cat. Birds Brit. Mus., xvii, 1892, 321, part, pl. 10, fig. 1 (Santa Marta, Colombia; San Esteban and Puerto Cabello, Venezuela?); Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1895, 459, part (Colombia).—(?)*P[riornites] subrufescens* Cabanis and Heine, Mus. Hein., ii, 1859, 114 (Cartagena).—(?)*Prionites parvirostris* Bonaparte, Compt. Rend., xxxviii, 1854, 659 (Cartagena, Colombia).—(?)*Momotus parvirostris* Sclater, Proc. Zool. Soc. Lond., 1857, 260.—(?)*Momotus swainsoni* (not of Sclater) Sclater and Salvin, Proc. Zool. Soc. Lond., 1868, 628 (San Esteban, Venezuela).

<sup>c</sup> I am quite unable to distinguish two specimens from Ambalema and Rio Guile, Honda, respectively, from Panama examples.

region margined, more or less distinctly, both above and below, by a narrow, sometimes interrupted, streak of turquoise blue or light greenish blue; rest of upper parts plain grayish bice green or dull oil green, passing into more decided green (bice or chromium green) on wing-coverts, secondaries, and tail, the middle rectrices becoming more bluish green or greenish blue distally and broadly tipped with dull black; alula and primary coverts dull bluish green, the outer webs of primaries (except innermost) clearer bluish green or greenish blue; shafts of remiges and rectrices black; under parts plain light grayish green (nearly chromium) paler and brighter on chin and throat, sometimes slightly tinged with olive-green on chest; lower foreneck with a median tuft of elongated black feathers, edged basally with light bluish green; under wing-coverts light buff, tinged with green, passing into dull green on edge of wing; inner webs of remiges passing into dull grayish buffy on edge, except distally; bill, legs, and feet black.

*Adult male*.—Length (skins), 398–420 (406); wing, 137.5–146 (142.5); tail, 219–232 (226.5); exposed culmen, 44–47 (45.8); tarsus, 29–30.5 (29.8); middle toe, 19–20.5 (19.7).<sup>a</sup>

*Adult female*.—Length (skins), 382–421 (397); wing, 136.5–144.5 (141.1); tail, 203–230 (220.3); exposed culmen, 39–45.5 (42.7); tarsus, 27.5–29.5 (28.4); middle toe, 18–20.5 (19.3).<sup>b</sup>

Northeastern Mexico, in States of Nuevo León (Boquillo; Linares; Rio de Ramos; Villa Grande; Hacienda de la Cruz; Rio Camarcho), Tamaulipas (Tampico; Alta Mira; Victoria; Sierra Madre near Victoria; Forlón; Xicotencal; Caballeros; Rio Martinez; Rio de la Cruz), Vera Cruz (Rivera; Jalapa; Córdoba; Misantla; Colipa; Cuichapa; Plan del Rio; Rio San Juan Martín; Cuesta de Misantla; Santa Ana; Hacienda Tortugas), Puebla (Rinconada), and San Luís Potosí (Vallés); Mexico (near City of Mexico)?

*Prionites caeruliceps* GOULD, Proc. Zool. Soc. Lond., 1836, 18 (Tamaulipas, Mexico; coll. Zool. Soc. Lond.).

*P[er]onites] caeruliceps* CABANIS and HEINE, Mus. Hein., ii, 1859, 113 (Jalapa, Vera Cruz).

*[Prionites] caeruliceps* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 156 (Jalapa).

*Momotus caeruliceps* LESSON, Actes Soc. Linn. Bordeaux, xii, 1842, 190; Desc. Mam. et Ois., 1847, 266.—GRAY, List Fissirostr. Birds Brit. Mus., 1848, 39.—BAIRD, Rep. Pacific R. R. Surv., 1858, 161 (Boquillo, Nuevo Leon); ed. 1860 ("Birds of North America"), 161, pl. 46; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 7 (Boquillo); Cat. N. Am. Birds, 1859, no. 119.—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 160 (Jalapa).

*M[omotus] caeruliceps* GRAY, Gen. Birds, ii, 1847, 68.

*[Momotus] caeruliceps* GRAY, Hand-list, i, 1869, 80, no. 936.

<sup>a</sup> Five specimens.

<sup>b</sup> Six specimens.



- Momotus cæruleiceps* SCLATER, Proc. Zool. Soc. Lond., 1857, 201 (Jalapa), 253 (monogr.); 1859, 367 (Jalapa); 1864, 176 (near City of Mexico); Cat. Am. Birds, 1862, 262 (Mexico).—COUES, Check List, 1873, no. 285.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 190, 229; Nom. N. Am. Birds, 1881, no. 381.—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 327 (Villa Grande, Hacienda de la Cruz, and Rio Camacho, Nuevo Leon; Sierra Madre, near Victoria, Xicotencal, and Tampico, Tamaulipas; Misantla, Colipa, Plan del Rio, Jalapa, Cuichapa, and Cordova, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 458 (Villa Grande, etc., Nuevo Leon; Valles, San Luis Potosi; Cuesta de Misantla, Santa Ana, Hacienda Tortugas, Rio San Juan Martin, etc., Vera Cruz).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Rinconada, Puebla).—PHILLIPS, Auk, xxviii, 1911, 76 (Caballeros, Rio Martinez, and Rio de la Cruz, Tamaulipas).
- [*Momotus*] *cæruleiceps* COUES, Key N. Am. Birds, 1872, 187.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102.—SHARPE, Hand-list, ii, 1900, 77.
- M[omotus]* *cæruleiceps* RIDGWAY, Man. N. Am. Birds, 1887, 278.
- P[riornites]* *caeruleiceps* BONAPARTE, Consp. Av., i, 1850, 165; Ateneo Italiano, ii, 1854, 317 (Consp. Volucr. Anisod., 1854, 8).
- Momotus coeruleiceps* SCHLEGEL, Mus. Pays-Bas, iii, no. 19, 1863, 4.
- Prionites caeruleocephalus* JARDINE and SELBY, Illustr. Orn., iv, 1839, pl. 42.
- Momotus subhutu* LESSON, Actes Soc. Linn. Bordeaux, xii, no. 41, Sept. 15. 1842, 190 (Mexico); Descr. Mam. et Ois., 1847, 265 (Mexico).

### MOMOTUS LESSONII LESSONII Lesson.

#### LESSON'S MOTMOT.

*Adults (sexes alike).*—Loral, orbital, and auricular regions, extreme anterior portion of forehead, upper margin of malar region, and patch on crown, black; forehead and sides of crown bright light greenish blue (nile blue to turquoise), this passing posteriorly around posterior margin of the black crown-patch where margined posteriorly by a crescentic band of rich violet-blue (sma't), this again margined posteriorly by a crescentic band of black, confluent with the black of superciliary region and lores; black of auricular region margined above by a narrow line of bright turquoise or Nile blue; hindneck clear olive-green (or somewhat greener) to tawny olive-green, passing into purer green (nearly parrot green) or olive-green on back, scapulars, rump, and upper tail-coverts; wings more decidedly green, passing into greenish blue on primaries, primary-coverts, and alula; tail green or bluish green, becoming more bluish distally, the terminal spatules of middle rectrices blue (dull cobalt or cærulean), rather broadly tipped with dull black; chin, throat, and lower portion of malar region dull light bluish green (nearly verdigris), the last with touches of bright turquoise or Nile blue along lower edge of the black suborbital area; foreneck and chest varying (individually) from olivaceous-tawny to light olive-green, the remaining under parts similar but gradually becoming lighter and more greenish posteriorly; a conspicuous tuft of narrow black feathers, edged toward base with light greenish blue, in center of foreneck; bill black, sometimes paler on base of mandible; iris red; legs and feet dusky (in dried skins).

*Young*.—Similar to adults, but colors much duller, the blue of forehead replaced by grayish brown or dusky (sometimes tinged with verdigris green), black crown-patch larger, under parts of body more rufescent, black tuft in center of foreneck wanting, middle rectrices without terminal spatules, and texture of plumage much looser.

*Adult male*.—Length (skins), 365–444 (404); wing, 132–144.5 (139.5); tail, 203–254 (230.5); exposed culmen, 38–46 (43.1); tarsus, 26–30 (28.4); middle toe, 17–21 (20.3).<sup>a</sup>

*Adult female*.—Length (skins), 350–410 (387); wing, 122.5–142 (135.1); tail, 178–250 (220.7); exposed culmen, 36.5–43 (40.9); tarsus, 27–30 (28.3); middle toe, 17–20 (18.6).<sup>b</sup>

Extreme southern Mexico, in State of Chiapas (Palenque; Huehuetán), southward through Guatemala (Dueñas; Cobán; Choctúm; Chiséc; Retalhuleu; San Gerónimo; Tolimán; Savana Grande; Alotenango; Lanquín; Mazatenango; Los Amates, Yzabál; Patulúl, Sololá; Pié de la Cuesta, San Marcos), British Honduras (Cayo; San Felipe; Toledo District), Salvadór (San Miguél), Honduras (Omoa; San Pedro; Copán; Chamellicón; Truxillo; Rio Segóvia; Yaruca; Céiba), Nicaragua (Realejo; Chontales; Chinandega; Managua; Sucuyá; Rio Escondido), and Costa Rica (San Carlos; San José; Grécia; Alajuela; Santa Ana; Santo Domingo de San Mateo; La Palma de Nicoya; Las Trojas; Volcán de Miravalles; Volcán de

<sup>a</sup> Twenty-one specimens.

<sup>b</sup> Twelve specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
MALES.					
Seven adult males from Vera Cruz ( <i>M. l. goldmani</i> ).....	143.4	242.9	44.1	30.4	20.1
Five adult males from Oaxaca ( <i>M. l. goldmani</i> ).....	145.7	237	45.4	30	19.8
Six adult males from Tabasco ( <i>M. l. goldmani</i> ).....	139.8	225.2	43.2	29.1	19.9
One adult male from Campeche ( <i>M. l. exiguus</i> ).....	129	211.5	39	26	18.5
Five adult males from Yucatan ( <i>M. l. exiguus</i> ).....	129.7	216	39.3	27.2	17.5
Four adult males from Chiapas ( <i>M. l. lessonii</i> ).....	138.9	238.8	45.4	28.5	18.7
One adult male from Guatemala ( <i>M. l. lessonii</i> ).....	144.5	230.5	43.5	30	20
One adult male from British Honduras ( <i>M. l. lessonii</i> ).....	138.5	227.5	41.5	29	20
Three adult males from Honduras ( <i>M. l. lessonii</i> ).....	138	217.3	42.3	28.2	19
Two adult males from Nicaragua ( <i>M. l. lessonii</i> ).....	135	219.7	40.7	27	19
Eight adult males from Costa Rica ( <i>M. l. lessonii</i> ).....	140.5	233.6	42.7	28.4	19.3
Two adult males from western Panama ( <i>M. l. lessonii</i> ).....	141.2	233.2	44.7	29.5	19.5
FEMALES.					
Five adult females from Vera Cruz ( <i>M. l. goldmani</i> ).....	136.1	222.2	43.1	28.5	19.8
Three adult females from Tabasco ( <i>M. l. goldmani</i> ).....	137.5	227.2	42	28.2	19.7
Three adult females from Yucatan ( <i>M. l. exiguus</i> ).....	129.7	207.3	38.7	28.5	19
Two adult females from Chiapas ( <i>M. l. lessonii</i> ).....	131.3	225.7	42	27	17.5
On adult female from Guatemala ( <i>M. l. lessonii</i> ).....	136.5	220	39	29	18.5
One adult female from British Honduras ( <i>M. l. lessonii</i> ).....	135	206	40	29	19
Two adult females from Honduras ( <i>M. l. lessonii</i> ).....	131.3	214	42	29.5	19.2
Four adult females from Costa Rica ( <i>M. l. lessonii</i> ).....	137.9	230.5	39.9	27.5	18.7
Two adult females from western Panama ( <i>M. l. lessonii</i> ).....	136.5	220.7	42	28.7	18.7

Poás; Volcán de Irazú; Cartago; Navarro de Cartago; Guayabo; Santa Maria de Dota; Boruca; Buenos Aires) to western Panamá (Cordillera de Tolé; Chitra; Divala; David; Mina de Chorchá; Bugaba; Volcán de Chiriquí; Boquete, 2,500–4,500 ft.).

*Momotus lessonii* LESSON, Rev. Zool., v, June, 1842, 174 (Realejo, Nicaragua; coll. Paris Mus.?); Sept. 15, 1842, 191 (Realejo); Descr. Mam. et Ois., 1847, 266.—DES MURS, Icon. Orn., livr. 11, Jan., 1848, pl. 62 (Realejo; type in coll. Mus. Paris).

*M[omotus] lessonii* GRAY, Gen. Birds, i, 1847, 68.—RIDGWAY, Man. N. Am. Birds, 1887, 278, part.

*Momotus lessoni* SCLATER, Proc. Zool. Soc. Lond., 1856, 139 (Chiriquí, Panama); 1853, 253 (Monogr.); 1859, 54 (Omoa, Honduras); Cat. Am. Birds, 1862, 262, part (Guatemala; Nicaragua).—SCLATER and SALVIN, Ibis, 1859, 131 (Guatemala; habits); Proc. Zool. Soc. Lond., 1870, 837 (Honduras).—MOORE, Proc. Zool. Soc. Lond., 1859, 54 (Omoa, Honduras).—SALVIN, Ibis, 1860, 100 (Dueñas, Guatemala); 1872, 321 (Chontales, Nicaragua); Proc. Zool. Soc. Lond., 1867, 150 (Cordillera de Tolé and David, Panama; crit.); 1870, 201 (Chitra, Mina de Chorchá, Bugaba, and Volcan de Chiriquí, Panama).—SCHLEGEL, Mus. Pays-Bas, iii, no. 19, 1863, 4, part (Guatemala).—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 177 (David, Panama); ix, 1868, 117 (San José, San Carlos, Dota and Grecia, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—BOUCARD, Liste Ois. récol. Guat., 1878, 26 (Guatemala); Proc. Zool. Soc. Lond., 1878, 48 (San José, Costa Rica; habits).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 399 (La Palma de Nicoya, Costa Rica; habits); vi, 1883, 387 (Sucuyá, Nicaragua).—ZELEDÓN, Proc. U. S. Nat. Mus., v, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 119 (San José, Alajuela, Santa Ana, Las Trojas, Cartago, and Navarro de Cartago, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., v, 1882, 501 (Volcan de Irazú, Costa Rica); x, 1887, 582, 591 (Truxillo and Rio Segovia, Honduras).—CHERRIE, Auk, ix, 1892, 322 (San José, Costa Rica; habits; food; descr. nest and eggs); Expl. Zool. Merid. Costa Rica, 1893, 47 (Boruca and Buenos Aires, Costa Rica).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 324, part (localities n. to Guatemala).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 127, in text (crit.).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 510 (Rio Escondido, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 456, part (Cayo and San Felipe, Brit. Honduras; Pie de la Cuesta, Retalhuleu, Toliman, Savana Grande, Alotenango, Dueñas, San Geronimo, Coban, Lanquin, Choctum, Chisee, etc., Guatemala; San Miguel, Salvador; San Pedro, etc., Honduras; Chinandega, etc., Nicaragua; San Carlos, etc., Costa Rica; David, etc., Panama).—UNDERWOOD, Ibis, 1896, 443 (Volcan de Miravalles, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 25 (Boquete, Panama, 2,500–4,500 ft.); Bull. Mus. Comp. Zool., xxxix, 1903, 143 (Ceiba and Yaruca, Honduras).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 89 (Los Amates, Mazatenango, and Patulul, Guatemala).—FERRY, Pub. 146, Field Mus. N. H., 1910, 262 (Guayabo, Costa Rica).

[*Momotus*] *lessoni* GRAY, Hand-list, i, 1869, 80, no. 937.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part.—SHARPE, Hand-list, ii, 1900, 77, part.

*Momotus lessoni lessoni* CARRIKER, Ann. Carnegie Mus., vi, 1910, 497 (Costa Rica; crit.).

[*Prionites*] *lessoni* BONAPARTE, Consp. Av., i, 1850, 165 (Realejo).—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 156 (Guatemala).

[*Prionites*] *lessoni* CABANIS and HEINE, Mus. Hein., ii, 1859, 113 (Guatemala).



- Prionites momotus* (not *Ramphastos momota* Linnæus) BONAPARTE, Proc. Zool. Soc. Lond., 1837, 114 (Guatemala; descr.).
- Pr[ionites] psalurus* BONAPARTE, Compt. Rend., xxxviii, 1854, 659, in text; Notes Orn. Coll. Dellatre, 1854, 88, in text; (Nicaragua; coll. Paris Mus.).
- [*Prionites*] *psalurus* BONAPARTE, Ateneo Italiano, ii, 1854, 317 (Consp. Volucr. Anisod., 1854, 8).—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 156 (Costa Rica).
- Prionites psalurus* CABANIS, Journ. für Orn., 1861, 255 (Costa Rica; crit.).
- Momotus psalurus* SCLATER, Proc. Zool. Soc. Lond., 1857, 259 (monogr.).
- Momotus subrufescens* (not of Sclater) SCHLEGEL, Mus. Pays-Bas, iii, no. 19, 1863, 3, part (Guatemala).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 321, part (Mina de Chorchá, Panama).

### MOMOTUS LESSONII EXIGUUS Ridgway.

#### YUCATAN MOTMOT.

Similar to *M. l. lessonii* but general color rather lighter and decidedly greener, the hindneck always green (concolor with back, etc.), and under parts with tawny wash (if present) confined to chest; averaging decidedly smaller, especially the bill.

*Adult male*.—Length (skins), 355–396 (384); wing, 126–132.5 (129.6); tail, 207–230 (215.1); exposed culmen, 36–41.5 (39.2); tarsus, 25–29 (27); middle toe, 17–18.5 (17.7).<sup>a</sup>

*Adult female*.—Length (skins), 362–373 (367); wing, 127–131.5 (129.7); tail, 204–212 (207.3); exposed culmen, 38–39.5 (38.7); tarsus, 27.5–29 (28.5); middle toe, 18.5–19.5 (19).<sup>b</sup>

Yucatan (Mérida; Temáx; Puerto Morelos; La Vega; Rio Lagartos; Peto; Xbac; Buctzotz) and Campeche (Apazote).

- Momotus lessonii* (not *M. lessonii* Lesson) LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 117, 204 (Merida, Yucatan).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 453 (Yucatan; habits).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 324, part (Temax, Buctzotz, and Peto, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 456, part (Temax, Buctzotz, Peto, and Merida, Yucatan).
- [*Momotus*] *lessonii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part.—SHARPE, Hand-list, ii, 1900, 77, part.
- Momotus lessonii* COLE, Bull. Mus. Comp. Zool., 1, 1906, 146 (Xbac, Yucatan).
- Momotus lessonii exiguus* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 89 (Temax, Yucatan; coll. U. S. Nat. Mus.).

### MOMOTUS LESSONII GOLDMANI Nelson.

#### GOLDMAN'S MOTMOT.

Similar to *M. l. exiguus*, but averaging decidedly larger (the bill conspicuously so), under parts still greener (more frequently devoid of tawny wash on chest), and blue nuchal crescent with very little if any (usually wholly without) violet-blue posterior margin.

<sup>a</sup> Six specimens.

<sup>b</sup> Three specimens.

*Adult male*.—Length (skins), 370–460 (411); wing, 135.5–151 (142.8); tail, 208–266 (235.3); exposed culmen, 38.5–49 (43.1); tarsus, 28.5–31.5 (29.2); middle toe, 19–21 (20).<sup>a</sup>

*Adult female*.—Length (skins), 380–432 (401); wing, 131.5–147.5 (137.9); tail, 213–250 (224.1); exposed culmen, 40.5–45 (42.7); tarsus, 27–31 (28.4); middle toe, 19–21 (19.7).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Playa Vicente; Cuichapa; Vera Cruz; Atoyac; Motzorongo; Minatitlán; Buena Vista; Orizaba; Tolosa; San Andrés Tuxtla; Miradór; Acho-tál), Oaxaca (Teotalcingo; Guichicovi; Chimalapa; Xacáltepec; Santo Domingo), and Tabasco (Teapa; Frontera).

*Momotus brasiliensis* (not of Latham) CASSIN, Proc. Ac. Nat. Sci. Phila., iv, 1848, 89 (Vera Cruz, Mexico).

*Momotus lessoni* (not *M. lessonii* Lesson) SCLATER, Proc. Zool. Soc. Lond., 1856, 285 (Cordova, Vera Cruz; crit.); 1859, 387 (Playa Vicente, Vera Cruz; Teotalcingo, Oaxaca); Cat. Am. Birds, 1862, 262, part (Mexico).—SCHLEGEL, Mus. Pays-Bas, iii, no. 19, 1863, 4, part (Mexico).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (tierra caliente of Vera Cruz).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 29 (Guichicovi and Chimalapa, Oaxaca).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 324, part (localities in southeastern Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 456 part (Xacaltepec, Teotalcingo, Chimalapa, and Guichicovi, Oaxaca; Orizaba, Cordova, Huatusco, Cuichapa, Vera Cruz, Atoyac, and Playa Vicente, Vera Cruz; Teapa, Tabasco).

[*Momotus*] *lessoni* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part (Mexico).—SHARPE, Hand-list, ii, 1900, 77, part (Mexico).

[*Momotus*] *lessonii* RIDGWAY, Man. N. Am. Birds, 1887, 278, part.

*Momotus lessoni goldmani* NELSON, Auk, xvii, no. 3, July, 1900, 256 (Motzorongo, Vera Cruz; coll. U. S. Nat. Mus.).

### MOMOTUS SUBRUFESCENS CONEXUS (Thayer and Bangs).

#### SMALL-BILLED MOTMOT.

Similar to *M. s. subrufescens*<sup>c</sup> but decidedly darker, anterior under parts usually extensively olivaceous, and wing and tail averaging shorter. Also resembling *M. lessonii*, but smaller, posterior under parts always more or less greenish instead of tawny, blue occipital band narrower, not turquoise blue anteriorly nor margined with black posteriorly, and under wing-coverts clear ochraceous-buff instead of light olive-greenish.

*Adults (sexes alike)*.—Anterior portion of forehead, lores, suborbital and auricular regions and upper portion of malar region, deep black; rest of forehead, together with superciliary region and anterior portion of crown bright light greenish blue (nile blue), changing to bright ultramarine or smalt blue on sides of occiput and across nape (these deep blue feathers light greenish blue or bluish green beneath surface

<sup>a</sup> Eighteen specimens.

<sup>b</sup> Eight specimens.

<sup>c</sup> See page 455.

and with a black subbasal mesial streak of black; a large, roundish patch of black occupying postero-central portion of crown and contiguous portion of occiput; hindneck, back, scapulars, rump, and upper tail-coverts plain olivaceous parrot green, more or less suffused with chestnut-tawny on nape (mostly concealed by overlapping blue occipital feathers); wings clearer (less olivaceous) green, becoming bluish green on primaries; tail clear green (dull parrot green) proximally, becoming more bluish green distally, the terminal "spatules" of the middle rectrices greenish blue, broadly tipped with dull black; suborbital black area margined below by a series of narrow feathers tipped with light greenish blue and violet-blue; general color of anterior under parts light olive-green superficially (this color underlaid by dull tawny or rufous-tawny) passing into olive-tawny or rufescent olive-tawny on posterior half (more or less) and on chin, the throat usually more or less strongly tinged with light green; under wing-coverts and broad edgings to proximal portion of remiges deep ochraceous-buff; bill black; iris red; legs and feet dusky brownish (in dried skins).

*Adult male*.—Length (skins), 385–420 (395); wing, 121–129 (126.6); tail, 224.5–238 (229.4); exposed culmen, 36–42.5 (38.7); tarsus, 27–29 (28.3); middle toe, 18–19 (18.5).<sup>a</sup>

*Adult female*.—Length (skins), 368–396 (378); wing, 119–128.5 (125.4); tail, 216–226.5 (219.1); exposed culmen, 37–41 (39.9); tarsus, 26–29.5 (27.6); middle toe, 17.5–19 (18.3).<sup>b</sup>

Canal Zone, eastern Panamá (Lion Hill; Chepo; San Pablo; Rio Indio; near City of Panamá; Sabana de Panamá; Punta de Sabana), and southward to south-central Colombia (Rio Guile, Honda; Ambalema).<sup>c</sup>

<sup>a</sup> Five specimens.

<sup>b</sup> Seven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Five adult males from Panama ( <i>M. s. conexus</i> ).....	126.6	229.4	38.7	28.3	18.5
Two adult males from south-central Colombia ( <i>M. s. conexus</i> ?)..	130.5	234	39	25.5	19.2
Ten adult males from Santa Marta, Colombia ( <i>M. s. subrufescens</i> )..	127.9	230.6	38	27.2	18
One adult male from s. e. Panama ( <i>M. r. reconditus</i> ).....	130	271	41.5	28.5	19
FEMALES.					
Seven adult females from Panama ( <i>M. s. conexus</i> ).....	125.4	219.1	39.9	27.6	18.3
Ten adult females from Santa Marta, Colombia ( <i>M. s. subrufescens</i> )	126.3	219.8	36.6	26.6	18

<sup>c</sup> Except for their slightly larger size, as shown in the above table of measurements, I am unable to detect the slightest difference between two adult males from the Colombian localities mentioned and the series from Panama.



- Momotus subrufescens* (not of Sclater) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 318 (Lion Hill, Panama).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 362 (Lion Hill; crit.).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 321, part (Chiriqui?; Chepo, and Panama, Panama).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 459 (Lion Hill; Chepo).—SALVADORI and FESTA, Boll. Mus. Zool., etc., xiv, 1899, no. 339, 8 (Punta de Sabana, Panama).—STONE, Proc. Ac. Nat. Sci. Phila., 1899, 305 (Ambalema, s.-centr. Colombia). [ *Momotus* ] *subrufescens* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part (Panama).—SHARPE, Hand-list, ii, 1900, 77, part (Panama). *M[omotus] subrufescens* SALVIN, Proc. Zool. Soc. Lond., 1867, 150, in text (Panama). *Momotus conexus* THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, Jan., 1906, 215 (Sabana de Panama; coll. E. A. and O. Bangs).

### MOMOTUS SUBRUFESCENS RECONDITUS (Nelson).

#### CHESTNUT-BELLIED MOTMOT.

Similar to *M. s. conexus* but coloration decidedly darker (back dark citrine instead of clear olive-green, under parts dull sudan brown or brussels brown instead of clear brownish tawny) and anterior under parts very slightly if at all glossed with olive-green; in the last character agreeing with *M. s. subrufescens*, but coloration much darker throughout.

*Adult male*.—Length (skin), 425; wing, 130; tail, 271; exposed culmen, 41.5; tarsus, 28.5; middle toe, 19.<sup>a</sup>

Eastern Panamá (Marraganti; Boca de Cupe).

*Momotus conexus reconditus* NELSON, Smithson. Misc. Coll., vol. 60, no. 3, Sept. 27, 1912, 4 (Marraganti, e. Panama; coll. U. S. Nat. Mus.).

### MOMOTUS MEXICANUS MEXICANUS Swainson.

#### MEXICAN MOTMOT.

*Adults (sexes alike)*.—Pileum and hindneck plain tawny, rufous-tawny, or (rarely?) cinnamon-rufous, passing into glaucous grayish green to light brownish olive-green on back, scapulars, rump, upper tail-coverts, wing-coverts, and secondaries, the center of crown sometimes tinged with dull greenish or olive-greenish; alula, primary coverts, and primaries dull bluish green; tail dull bluish green, more bluish distally, the middle rectrices broadly tipped with dull black; shafts of remiges and rectrices black; loreal, orbital, and auricular regions black, the black beneath eye margined below by a patch of dull blue (nearly campanula); under parts mostly pale buffy greenish, passing into buffy whitish posteriorly, the color more pronounced on chest and foreneck, which are sometimes tinged with yellowish buffy; lower foreneck with a median tuft of elongated black feathers, narrowly edged (except distally) with pale bluish green or greenish

<sup>a</sup> One specimen, from Boca de Cupe. A specimen (type of the subspecies, sex not determined) from Marraganti is decidedly smaller, measuring as follows: Length (skin), 391; wing, 124; tail, 236; exposed culmen, 38.5; tarsus, 28; middle toe, 18.

blue; under wing-coverts pinkish buff, passing into pale greenish on edge of wing; inner webs of remiges broadly edged with deeper pinkish buff, except distally; bill black, the mandible sometimes paler basally; iris red; legs and feet dusky (grayish in life).

*Adult male*.—Length (skins), 285–337 (291); wing, 109–123 (117); tail, 147–181 (166.5); exposed culmen, 36.5–41 (38.2); tarsus, 25–27 (26.3); middle toe, 17–19.5 (17.7).<sup>a</sup>

*Adult female*.—Length (skins), 286–323 (306); wing, 106–116 (112); tail, 139–163 (154.8); exposed culmen, 30–40 (37); tarsus, 24.5–27 (25.3); middle toe, 17–18 (17.4).<sup>b</sup>

Middle Mexico, in States of Sinaloa (Mazatlán; Presidio de Mazatlán; Las Flores; Plomosas; Rosário; Escuinapa; Chalpa; Las Palmas; Sierra de Armigas, 3,500 ft.; Los Pielas, 3,500 ft.; Rio Juana Gomez), Durango (Chacalá), Zacatecas, Jalisco (Etzatlán; Bolaños; San Marcos; Tuxpán; Beltrán; Tonila), Colima (Plains of Colima; Colima; Manzanillo Bay; Hacienda San Antonio), Michoacán (Ahuacana)?, Mexico (Temiscáltepec; near City of Mexico), Puebla (Chietla; Tochimilco; Atlixco), and western Vera Cruz (Orizaba), and Territory of Tepic (Tepic; Tuxpán; San Blas; Santiago; Compostela; Sierra de Nayarit).

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Thirteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
One adult male from Puebla .....	112.5	159.5	33	25.5	17.5
One adult male from Durango .....	116	168	36	25	17.5
One adult male from Jalisco .....	123	181	41	27	19.5
Four adult males from Tepic .....	115.1	158.7	39.2	26.9	18
Five adult males from Sinaloa .....	116.3	160.5	38.2	26.1	17.7
Five adult males from Colima .....	117.7	174.6	37	26	18.5
One adult male from Michoacan ( <i>M. m. saturatus</i> ) .....	120.5	174	43	27	19.5
Two adult males from Guerrero ( <i>M. m. saturatus</i> ) .....	122.7	172.2	43.7	26.7	18.7
Ten adult males from Oaxaca ( <i>M. m. saturatus</i> ) .....	121.3	176.8	41.6	26.9	19.7
One adult male from Chiapas ( <i>M. m. saturatus</i> ) .....	131	191	41	25.5	18
Three adult males from Guatemala ( <i>M. castaneiceps</i> ) .....	131.2	203.5	40.7	27.2	19.8
FEMALES.					
One adult female from Puebla .....	113	154	35.5	24	16.5
One adult female from Jalisco .....	106	139	30	25	17
Three adult females from Tepic .....	113.5	159.5	37.7	24.8	17.3
Six adult females from Sinaloa .....	110.7	153.5	37.7	25.2	17.5
Three adult females from Colima .....	115.5	157.8	37.3	26.2	17.3
One adult female from Guerrero (El Rincon) .....	114.5	147	40.5	27	18
One adult female from Guerrero (El Limon) ( <i>M. m. saturatus</i> ) ..	124	168	41	26.5	19.5
Four adult females from Oaxaca ( <i>M. m. saturatus</i> ) .....	124.1	178.8	43.2	26.4	18.7
Two adult females from Chiapas ( <i>M. m. saturatus</i> ) .....	125.5	188.5	38	26.7	18

- Momotus mexicanus* SWAINSON, Philos. Mag., n. s., i, 1827, 442 (Temiscaltepec, Mexico).—LESSON, Descr. Mam. et Ois., 1847, 266.—GRAY, List Fissirostr. Birds Brit. Mus., 1848, 40.—SCLATER, Proc. Zool. Soc. Lond., 1857, 253 (monogr.); 1860, 252 (Orizaba, Vera Cruz); Cat. Am. Birds, 1862, 262, part.—SCHLEGEL, Mus. Pays-Bas, Momoti, 1863, 6 (Mexico).—SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 560 (Vera Cruz).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 289 (Mazatlan, Sinaloa; Plains of Colima; habits; descr. nest and eggs).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 160 (Chietla Puebla).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 328, part (Mazatlan; Bolaños, Beltran, and Tonila, Jalisco; Santiago and San Blas, Tepic; Plains of Colima; near City of Mexico; Chietla, Puebla).—JOUY, Proc. U. S. Nat. Mus., xvi, 1893, 785 (San Marcos, Jalisco; habits, voice, etc.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 460, part (Presidio de Mazatlan, etc., Sinaloa; Cuernavaca, Morelos; etc.).—BAILEY (H. H.), Auk, xxiii, 1906, 388 (San Blas, Tepic).
- Momotus mexicanus* GRAY, Gen. Birds, ii, 1847, 68.—RIDGWAY, Man. N. Am. Birds, 1887, 278, part.
- [*Momotus*] *mexicanus* BONAPARTE, Ateneo Italiano, ii, 1854, 317 (Consp. Volucr. Anisod., 1854, 7).—GRAY, Hand-list, i, 1869, 80, no. 938, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part.—SHARPE, Hand-list, ii, 1900, 77.
- Prionites mexicanus* WAGLER, Isis, 1831, 528.—SWAINSON, Classif. Birds, ii, 1837, 338.—SWAINSON, Zool. Illustr., ser. 2, ii, Aug., 1831, pl. 81.
- [*Prionites*] *mexicanus* BONAPARTE, Consp. Av., i, 1850, 165.
- [*Crybelus*] *mexicanus* CABANIS and HEINE, Mus. Hein., ii, 1859, 113.
- [*Crybelus*] *mexicanus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 155.
- Prionites martii* (not of Spix) SWAINSON, Zool. Illustr., ser. 2, ii, 1831-32, pl. 81.
- Momotus martii* JARDINE and SELBY, Illustr. Orn., i, 1827, pl. 23.
- Momotus mexicanus saturatus* (not of Nelson) MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 351 (Escuinapa, etc., Sinaloa; habits).

### MOMOTUS MEXICANUS SATURATUS Nelson.

#### COAST MOTMOT.

Similar to *M. m. mexicanus* but decidedly larger, and averaging deeper in color.<sup>a</sup>

*Adult male*.—Length (skins), 313-355 (340); wing, 115-131 (122.2); tail, 166-191 (170.8); exposed culmen, 37-46.5 (42); tarsus, 25.5-28.5 (28.9); middle toe, 17.5-19 (19.2).<sup>b</sup>

*Adult female*.—Length (skins), 318-350 (331); wing, 114.5-127 (123.2); tail, 147.5-190 (176); exposed culmen, 37.5-43.5 (41.3); tarsus, 25-27 (25.8); middle toe, 17.5-19 (18.9).<sup>c</sup>

Pacific slope of southern Mexico, in States of Guerrero (El Limón; El Rincón; Acapulco; Iguala; Amula; Chilpancingo; Egidio Nuevo),

<sup>a</sup> The color difference mentioned in the original description are by no means constant, occasional specimens being not at all different in color from *M. m. mexicanus*, while of the latter some specimens are as deeply colored as any of *M. m. saturatus*. The average difference is quite perceptible, however, and the average difference in size very marked.

<sup>b</sup> Fourteen specimens.

<sup>c</sup> Thirteen specimens.



Oaxaca (Tehuantepec; Santa Efigénia; Cuicatlán; Chihuitán; Barrio; Tapaná; Los Cués; Putla; Rio Grande; Sola; Lucapa; Golán; Tapaná-tepec) and Chiapas (Tonalá; San Vicente; San Bartolomé).

*Momotus mexicanus* (not of Swainson) SCLATER, Proc. Zool. Soc. Lond., 1859, 387 (Rio Grande, Oaxaca); Cat. Am. Birds, 1862, 262, part.—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 29 (Chihuitan, Barrio, Santa Efigenia, and Los Cues, Oaxaca).—SALVIN, Proc. Zool. Soc. Lond., 1883, 426 (Acapulco, Guerrero).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 328, part (Rio Grande, Tehuantepec, and Sola, Oaxaca; Rincon, Amula, Chilpancingo, and Acapulco, Guerrero; Tonalá, Chiapas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 460, part (Amula, etc., Guerrero; Lucapa, Golán, Cuicatlan, Chihuitan, Tapanatepec, etc., Oaxaca; Tonalá, Chiapas).

[*Momotus*] *mexicanus* GRAY, Hand-list, i, 1869, 80, no. 938, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part.

[*Momotus*] *mexicanus* RIDGWAY, Man. N. Am. Birds, 1887, 278, part.

*Momotus mexicanus saturatus* NELSON, Auk, xiv, no. 1, Jan., 1897, 49 (Tehuantepec City, Oaxaca; coll. U. S. Nat. Mus.).

[*Momotus*] *saturatus* SHARPE, Hand-list, ii, 1900, 77.

### MOMOTUS CASTANEICEPS Gould.

#### CHESTNUT-HEADED MOTMOT.

Similar to *M. mexicanus saturatus* but color of pileum much darker (bright chestnut), lores wholly uniform black, black suborbital area margined beneath by greenish white instead of blue, and size averaging larger.

*Adult male*.—Whole pileum deep chestnut, passing, somewhat abruptly, into chestnut-tawny on hindneck; back, scapulars, rump, and wing-coverts plain grayish green (liver green to dull oil-green); alula, primary coverts, remiges, upper tail-coverts, and tail more bluish green (nearly beryl green), the primaries and distal portion of rectrices somewhat bluer; shafts of rectrices black, the expanded tip of middle pair of rectrices very broadly tipped with black; loreal, suborbital, and auricular regions black, the last partly light blue on upper-distal portion; chin greenish white or dull yellowish white, this extending across anterior portion of malar region to lower margin of the black suborbital area; rest of under parts pale grayish green, deeper (approaching chromium green) and somewhat suffused (especially beneath surface) with pale tawny or tawny buff on chest, passing into whitish on hinder flanks, anal region, and under tail-coverts; middle upper chest with a conspicuous tuft of elongated narrow black feathers, some of which are edged with light bluish green anteriorly; under wing-coverts pale dull pinkish buff, passing into pale greenish along margin of wing; bill and feet black; iris red;<sup>a</sup> length (skins), 351–375 (364); wing, 129–134 (131.2); exposed culmen, 39.5–41.5 (40.7); tarsus, 26–28 (27); middle toe, 19.5–20 (19.8).<sup>b</sup>

<sup>a</sup> According to N. Dearborn.

<sup>b</sup> Three specimens.

Guatemala (Plains of Zacapa; El Rancho, Zacapa; Rio Montagua; "Valley of Rio Montagua from Guastatoya and Magdalena to Gualán").

*Momotus castaneiceps* GOULD, Proc. Zool. Soc. Lond., xxii, 1854, 154 (Guatemala; coll. J. Gould).—SCLATER, Proc. Zool. Soc. Lond., 1857, 254 (monogr.).—SALVIN, Ibis, 1861, 354 (Plain of Zacapa, Guatemala; crit.).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 329 (Rio Montagua, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 461 (Valley of Rio Montagua from Guastatoya and Magdalena to Gualán).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 89 (El Rancho, Zacapa, Guatemala).

[*Momotus*] *castaneiceps* GRAY, Hand-list, i, 1869, 80, no. 940.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102.—SHARPE, Hand-list, ii, 1900, 77.

[*Cerybelus*] *castaneiceps* CABANIS and HEINE, Mus. Hein., ii, 1859, 112, footnote.

### Genus UROSPATHA Salvadori.

*Urospatha* SALVADORI, Atti Roy. Accad. Sci. Torino, iv, Dec., 1868, 179. (Type, *Prionites martii* Spix.)

Large Momotidæ (length about 420–525 mm.) resembling *Momotus* but with only ten rectrices (these relatively narrower) and more coarsely serrate tomia, the serrations extending nearer to tip of bill.

Bill about as long as head, distinctly decurved terminally, much deeper than wide at nostrils; culmen distinctly decurved from base (more strongly so terminally), narrowly rounded or very indistinctly ridged; gonys less than twice as long as mandibular rami, broadly rounded, slightly convex and prominent basally, faintly concave terminally, the tip of mandible slightly decurved; serrations of tomia large and very prominent (except basally), extending to very near tip of bill. Nostril completely exposed, large, obliquely broadly oval, in anterior end of nasal fossa. No prefrontal (postnasal) antrorse bristles; rictal bristles obvious but small and weak, those of malar apex larger, but not strong, the feathers of chin with small, very slender, recurved bristly tips. Head completely feathered, the auricular feathers elongated, rather stiff, producing a conspicuous tuft on each side of head; middle of foreneck, or upper chest, with a narrow tuft of elongated feathers. Wing rather short, the longest primaries exceeding longest secondaries by less than half the length of exposed culmen; sixth and seventh primaries longest, the eighth about equal to fourth, the ninth about equal to or slightly shorter than second, the tenth (outermost) nearly three-fourths as long as ninth. Tail more than half as long again as wing, excessively graduated, the middle pair of rectrices much more than half as long again as next pair, their webs usually denuded subterminally, the tip racquet-shaped; rectrices ten, the outer pair nearly three-fourths as long as the next pair. Tarsus decidedly longer than middle toe with claw, nearly as long as distance from nostril to tip of maxilla, stout.

*Coloration*.—Head, neck, and most of under parts plain tawny, the auricular tufts (together with orbital, malar, and loreal regions) and jugular tuft black; remaining upper parts green, passing into blue on primaries; tail and posterior under parts bluish green.

*Range*.—Nicaragua to Amazon Valley. (Monotypic.)

KEY TO THE SUBSPECIES OF *UROSPATHA MARTII*.

*a*. Smaller (wing less than 145, tail less than 250); coloration darker, the pileum chestnut, the under parts deep cinnamon-rufous. (Upper Amazon Valley.)

*Urospatha martii martii* (extralimital).<sup>a</sup>

*aa*. Larger (wing averaging much more than 145, tail averaging more than 260, culmen averaging more than 43); coloration lighter, the pileum cinnamon-rufous to rufous-tawny, the under parts tawny-ochraceous anteriorly deepening into ochraceous-rufous or clear cinnamon-rufous posteriorly. (Northern Ecuador to eastern Nicaragua.).....*Urospatha martii semirufa* (p. 468).

**UROSPATHA MARTII SEMIRUFA (Sclater).**

GREATER RUFOUS MOTMOT.

*Adults (sexes alike)*.—Pileum and hindneck plain bright cinnamon-rufous, becoming slightly deeper on lower hindneck, where very sharply defined against the uniform bright olivaceous parrot green of back, scapulars, rump, and upper tail-coverts; wing-coverts and secondaries purer (less olivaceous) parrot green or grass green; alula and primary coverts bluish green; outer webs of primaries clear greenish blue, the five or six outer-most quills broadly edged (at least in part) with deep violet-blue (hyacinth); tail bluish green basally passing into greenish blue distally, the middle rectrices tipped with dull black; loreal, orbital, and auricular regions black; malar region, chin, throat, and foreneck bright or clear tawny-ochraceous, deepening gradually into deep rufous-tawny or cinnamon-rufous on abdomen and sides; flanks, anal region, thighs, and under tail-coverts plain verdigris green, glaucous-green, or deep oil green; a small tuft of elongated black feathers in center of lower foreneck, the basal portion of these feathers similar in color to the general color of surrounding parts; under wing-coverts dull verdigris green; inner webs of remiges slate color or blackish slate; under surface of rectrices dull black or slate-black; shafts of remiges and rectrices glossy black; bill black; legs and feet blackish (in dried skins).

<sup>a</sup> *Prionites martii* Spix, *Avium Species Novæ* (Av. Bras.), i, "1824" (=1825-1826?), 64, pl. 60 (near Pará, Brazil; coll. Munich Mus.).—*M[omotus] martii* Gray, Gen. Birds, i, 1847, 68.—*C[rybelus] marti* Cabanis and Heine, Mus. Hein., ii, Nov., 1859, 112, part (Peru; Amazon Valley).—*Urospatha martii* (not of Salvadori, 1868) Taczanowski, Orn. du Pérou, iii, 1886, 111 (Monterico, centr. Peru); Sharpe, Cat. Birds Brit. Mus., xvi, 1892, 314, part (Sarayacu, e. Ecuador; Chyavetas, e. Peru; Apollo, Bolivia).—*Urospatha martii martii* Hellmayr, Novit. Zool., xiv, no. 2, Nov., 1907, 403 (Borba, Rio Madeira, Brazil; crit.).—*Baryphthengus martii* Berlepsch, Journ. für Orn., 1889, 308 (Yurimaguas, n. e. Peru; crit.).—[*Crypticus*] *martii* Bonaparte, Ateneo Italiano, ii, 1854, 317 (Consp. Volucr. Anisod., 1854, 7).



*Young*.—Similar to adults but green of upper parts darker and duller, posterior under parts olive-green instead of bluish green, and black tuft on center of foreneck smaller.

*Adult male*.—Length (skins), 420–525 (454); wing, 140.5–159 (151.8); tail, 241–321 (278.1); exposed culmen, 42.5–53 (47.1); tarsus, 28–34 (31.4); middle toe, 19.5–24 (22).<sup>a</sup>

*Adult female*.—Length (skins), 435–512 (459); wing, 145–157.5 (150.8); tail, 258–311 (276.3); exposed culmen, 43–51.5 (46.5); tarsus, 30–33 (31.7); middle toe, 21–23.5 (22.1).<sup>b</sup>

Eastern Nicaragua (La Libertád, Chontales; Rio Escondido) and southward through Caribbean slope of Costa Rica (San Carlos; La Vijagua; Barranca; Cuabre; Guácimo; Guápiles; Carrillo; El Hogár; Guayabo; Volcán de Turrialba; Naranjo de Cartago; Angostura; Jiménez; Rio Siesola; Pacuare; Talamanca), Panama (Santa Fe and Santiago, Veragua; Calobre; Lion Hill; Cerro Azúl), and Colombia ("Bogota"; Santa Marta; Remédios and Nichi, Antioquia; Rio Nercua; Honda) to northwestern Ecuador<sup>c</sup> (Chimbo; Cachavi; Paramba; Foreste del Rio Peripa).

*Momotus martii* (not *Prionites martii* Spix) CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 136 (Rio Nercua, Colombia).—(?)SCLATER, Cat. Am. Birds, 1862, 262, excl. syn. part (Ecuador).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama); ix, 1868, 117 (Pacuare, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill).—SALVIN, Proc. Zool. Soc. Lond., 1867, 151 (Santa Fe and Santiago de Veragua, Panama); 1870, 201 (Calobre, Panama); Ibis, 1872, 320 (Chontales, Nicaragua).—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 571 (Chimbo, w. Ecuador; crit.).

[*Momotus*] *martii* GRAY, Hand-list, i, 1869, 80, no. 939, part (w. Ecuador; Colombia).

[*Crypticus*] *martii* BONAPARTE, Consp. Av., i, 1850, 165, part (Colombia).

<sup>a</sup> Twenty-one specimens.

<sup>b</sup> Thirteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Nine adult males from Costa Rica.....	154.8	292.4	48.7	32.4	22.2
Nine adult males from Panama.....	149.6	267.9	46.6	31	22
Three adult males from central Colombia (Honda).....	149.2	264.3	43	29.5	21.7
One adult male from Peru ( <i>U. m. martii</i> ).....	142.7	240	40	29.5	20
One adult (male?) from Amazon Valley, Brazil ( <i>U. m. martii</i> )..	143.5	240	42	30.5	20
FEMALES.					
Ten adult females from Costa Rica.....	152.3	281.1	47.1	31.7	22.2
Three adult females from Panama.....	145.7	263.3	44.2	31.8	21.7

Besides averaging larger, specimens from Costa Rica and Nicaragua are somewhat lighter colored than many Panama examples, which, together with Colombian ones, vary in the direction of *U. m. martii*; still, even Colombian examples resemble the latter less than they do the Costa Rican series.

<sup>c</sup> I have not seen an Ecuadorean example of this species.

- [*Trybelus*] *martii* CABANIS and HEINE, Mus. Hein., ii, Nov., 1859, 112, part (Colombia).
- Urospatha martii* SALVADORI, Atti Roy. Accad. Torino, iv, 1868, 179 (Costa Rica)—BOUCARD, Proc. Zool. Soc. Lond., 1878, 49 (San Carlos, Costa Rica; notes, etc.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 534 (Remedios and Nichi, Antioquia, Colombia).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Naranjo de Cartago and Jimenez, Costa Rica).—SHARPE, Cat. Birds Brit. Mus., Brit. Mus., xvii, 1892, 314, part (Chontales, Nicaragua; Angostura, Costa Rica; Veragua, Panama; Remedios, Colombia).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 510 (Rio Escondido, Nicaragua).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 18 (Foreste del Rio Peripa, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 17 (Loma del Leon, Panama).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 495 (Caribbean lowlands of Costa Rica, up to 2,000 ft.; habits).
- [*Urospatha*] *martii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part.—SHARPE, Hand-list, ii, 1900, 76, part.
- Baryphthengus martii* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 58, July, 1895, 462, part (La Libertad, etc., Nicaragua; San Carlos, etc., Costa Rica; Santa Fe, Santiago de Veragua, Calobre, etc., Panama).
- Momotus semirufus* SCLATER, Rev. et Mag. de Zool., v, Nov., 1853, 489 (Santa Marta, Colombia, and Rio Javarri; coll. Brit. Mus.); Proc. Zool. Soc. Lond., 1855, 136 (Bogota, Colombia); 1857, 254 (monogr.).—SCHLEGEL, Mus. Pays-Bas, Momoti, 1863, 5 (Bogota).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 363 (Lion Hill, Panama).
- [*Baryphonus*] *semirufus* BONAPARTE, Ateneo Italiano, ii, 1854, 317 (Consp. Volucr. Anisod., 1854, 8).
- Urospatha martii semirufa* HARTERT, Novit. Zool., v, 1898, 497 (Chimbo, Paramba, and Cachavi, n. w. Ecuador, 500-3,500 ft.; crit.).
- U[rospatha] m[artii] semirufa* HELLMAYR, Novit. Zool., xiv, 1907, 403, in text (w. Ecuador; Bogota; Costa Rica).

### Genus ELECTRON Gistel.

- Crypticus* (not of Latreille, 1817) SWAINSON, Classif. Birds, ii, 1837, 338. (Type *Momotus platyrhynchus* Leadbeater.)
- Electron*<sup>a</sup> GISTEL, Naturgesch. des Thierreichs für höhere Schulen, 1848, p. viii. (New name to replace *Crypticus* "Bonaparte (Vogel a. Brasil)," i. e., Swainson, preoccupied.)
- Prionirhynchus* (not of Jacquinot and Lucas, 1854) SCLATER, Proc. Zool. Soc. Lond., 1857, 256. (Type, *Momotus platyrhynchus* Leadbeater.)
- Prionornis*<sup>b</sup> SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 57, May, 1895, 454 and sig. 59\*, July, 1895, 467 (ex SCLATER, manuscript). (New name to replace *Prionirhynchus* Sclater, preoccupied.)

Medium-sized Momotidæ (length about 300 mm.) with the bill very broad, depressed, decurved, and conspicuously carinate, the sides of maxilla next to the median ridge deeply concave or hollowed out; width of bill at nostrils equal to nearly half the distance from nostril to tip of maxilla; middle rectrices less than one-third longer than next pair, the webs denuded subterminally for less than length of culmen, sometimes not denuded, but merely contracted; no superciliary tufts, and without brightly colored feathers or black patch on throat.

<sup>a</sup> *Ἠλεκτρον*, something bright and beaming. (Richmond.)

<sup>b</sup> *Πρωων*, a saw; *ὄρνις*, bird. (Richmond.)

Bill about as long as head, strongly decurved, very broad and depressed (width at nostrils nearly equal to half the distance from nostril to tip of maxilla); culmen conspicuously carinate, the sides of maxilla immediately below the flattened ridge deeply hollowed out or concave; gonys less than twice as long as mandibular rami, very broadly rounded, but with faint indication of a narrow median ridge; tomia very finely serrate, the serrations obsolete only at extreme ends of tomia. Nostril rather small, roundish, in anterior end of nasal fossa, partly concealed by latero-frontal feathering. No prefrontal (postnasal) bristles; rictal bristles obvious, but rather weak, those of malar apex larger and stronger, the feathers of chin with very minute bristly recurved points. Head completely feathered, the auricular feathers elongated, rather stiff, forming a conspicuous tuft; a tuft of elongated feathers on middle of lower foreneck. Wing rather short and rounded, the longest primaries exceeding longest secondaries by not more than length of tarsus; fifth, sixth, and seventh primaries longest, the eighth longer than fourth, the ninth equal to second or third, the tenth (outermost) decidedly less to slightly more than two-thirds as long as ninth. Tail about one-third longer than wing, excessively graduated, the middle pair of rectrices nearly one-third longer than next pair, with webs contracted subterminally or else (usually) completely denuded for a distance equal to or greater than length of the racquet-shaped tip; rectrices 10, the outer pair nearly to quite two-thirds as long as next pair. Tarsus shorter than middle toe with claw.

*Coloration*.—General color plain green, more bluish on tail and primaries; auricular tuft (together with orbital and loreal regions) and tuft on lower foreneck black; head, neck, and chest otherwise plain tawny, or else superciliary region blue.

*Range*.—Southern Mexico (State of Vera Cruz) to upper Amazon Valley. (Two species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF ELECTRON.

- a. Pileum and hindneck dull cinnamon-rufous or russet-tawny, the foreneck, chest, and breast similar but rather lighter. (*Electron platyrhynchus*.)
- b. Color of pileum, etc., darker, more castaneous; chin indistinctly dull greenish. (Upper Amazon Valley, in Brazil, Peru, and Ecuador.)

***Electron platyrhynchus platyrhynchus* (extralimital).<sup>a</sup>**

<sup>a</sup> [*Momotus*] *platyrhynchus* Leadbeater, Trans. Linn. Soc., xvi, pt. i, 1829, 92 (Brazil; type now in Liverpool Mus.).—*Momotus platyrhynchus* Jardine and Selby, Illustr. Orn., iii, 1831, pl. 106 [bis].—*C[rypticus] platyrhynchus* Swainson, Classif. Birds, ii, 1837, 338.—*Prionirhynchus platyrhynchus* Selater, Proc. Zool. Soc. Lond., 1857, 256 (e. Peru; Bolivia); Cat. Birds Brit. Mus., xvii, 1892, 315, part.—*Prionornis platyrhynchus* Salvin and Godman, Biol. Centr.-Am., Aves, ii, sig. 58\*, July, 1895, 467, part.—*Crypticus martii* (not *Prionites martii* Spix) Bonaparte, Proc. Zool. Soc. Lond., 1837 (1838), 119; Nuov. Ann. Sci. Nat. (Bologna), ii, 1838, 411 (excl. syn. *Prionites martii* Spix).



bb. Color of pileum, etc., lighter and duller, less castaneous; chin distinctly and extensively greenish blue or bluish green.

c. Back, etc., more olivaceous green (deep hellebore green to deep forest green), posterior under parts light olivaceous green (American green to pistachio green). (Costa Rica to Canal Zone).. **Electron platyrhynchus minor** (p. 472).

cc. Back, etc., purer green (deep Hay's green), posterior under parts light bluish green (Niagara green). (Eastern Panama; Colombia?)

**Electron platyrhynchus suboles** (p. 474).

aa. Pileum and hindneck green; a bright blue superciliary patch; foreneck, chest, and breast green or olive. (*Electron carinatus*.)

b. Upper parts more olivaceous green; under parts more or less suffused (sometimes strongly) with tawny. (Southeastern Mexico to Honduras.)

**Electron carinatus carinatus** (p. 474).

bb. Upper parts grass green; under parts slightly olivaceous green, without tawny suffusion. (Northwestern Costa Rica).. **Electron carinatus viridis** (p. 476).

### ELECTRON PLATYRHYNCHUS MINOR (Hartert).

#### LESSER BROAD-BILLED MOTMOT.

Similar to *E. p. platyrhynchus*,<sup>a</sup> but color of head, neck, and chest lighter (less castaneous), chin more distinctly and more extensively bluish, and size averaging smaller.

*Adults (sexes alike).*—Pileum, hindneck, sides of neck, and subauricular and malar regions, plain dull cinnamon-rufous, passing gradually into a very slightly paler but similar color on throat, foreneck, and chest; chin and upper throat dull verdigris green; loreal, orbital, and auricular regions uniform black; a tuft of large, elongated, rather broad black feathers on center of foreneck; back, scapulars, rump, and upper tail-coverts plain olivaceous parrot green, the wing coverts and secondaries purer (less olivaceous) green, the outer primaries, together with primary coverts and alula more bluish green; tail bluish green proximally, passing into greenish blue distally, the middle rectrices broadly tipped with dull black; shafts of remiges and rectrices glossy black; under surface of tail dark slate or blackish slate; breast, abdomen, sides, flanks, and under tail-coverts plain dull bluish green (nearly verdigris), usually tinged, more or less, especially on upper breast, with oil green; bill black, paler at tip; legs and feet blackish (in dried skins).

*Adult male.*—Length (skins), 292–325 (309); wing, 110–118 (112.8); tail, 155–192 (171); exposed culmen, 35–40 (38.1); tarsus, 17–18.5 (17.8); middle toe, 13–15.5 (15.1).<sup>b</sup>

<sup>a</sup> See p. 471.

<sup>b</sup> Fourteen specimens.

*Adult female*.—Length (skins), 282–315 (303); wing, 106–116 (110.9); tail, 151.5–186.5 (168.6); exposed culmen, 34–39 (36.5); tarsus, 16.5–18 (17.2); middle toe, 13–15 (13.9).<sup>a</sup>

Eastern Nicaragua (Bluefields River; Chontales; Rio Escondido) southward through Costa Rica (Volcán de Miravalles; La Vijagua; Volcán de Turrialba; Guayabo; Bonilla; Rio Reventazón; El Hogár; Guápiles; Jiménez; La Junta; Atirro; Barranca; Angostura; mouth of Rio Matina; Talamanca) to Panamá (Boquerón, Chiriquí; Santa Fe and Calobre, Veragua; Lion Hill; San Pablo; Frijole; Chepo).

*Prionirhynchus platyrhynchus* (not *Momotus platyrhynchus* Leadbeater) SCLATER, Proc. Zool. Soc. Lond., 1857, 256, part (monogr.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 362 (Lion Hill, Panama); 1867, 279 (Bluefields R., Nicaragua).—SALVIN, Proc. Zool. Soc. Lond., 1867, 151 (Santa Fe de Veragua, Panama); Ibis, 1872, 321 (Chontales, Nicaragua).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 117 (Atirro, Barranca, and Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Barranca, Angostura, and Jimenez, Costa Rica).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 315, part (Chontales, etc., Nicaragua; Angostura, Costa Rica; Chepo, Panama, etc., Panama).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 510 (Rio Escondido, Nicaragua).—UNDERWOOD, Ibis, 1896, 443 (Volcan de Miravalles, Costa Rica).

[*Prionirhynchus*] *platyrhynchus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102, part.

*Crypticus platyrhynchus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 136 (Rio Nercua, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama).

*Prionornis platyrhynchus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 58\*, July, 1895, 467, part (Chontales, etc., Nicaragua; Atirro, etc., Costa Rica; Lion Hill, etc., Panama).

*Prionirhynchus platyrhynchus minor* HARTERT, Novit. Zool., v, no. iv, Dec. 31, 1898, 498 (Panama; coll. Tring Mus.).

*P[ri]onirhynchus p[latyrhynchus] minor* HELLMAYR, Novit. Zool., xiv, 1907, 404 (Panama; Costa Rica; Nicaragua).

<sup>a</sup> Twelve specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
MALES.					
Eight adult males from Costa Rica.....	112.1	166.1	38.1	17.7	14.2
One adult male from western Panama (Chiriqui).....	118	192	.....	18	14
Five adult males from eastern Panama (Canal Zone).....	113	173.8	38.2	17.8	14.6
One adult male from Darien, Panama ( <i>E. p. suboles</i> ).....	117	188	42	18	13.5
One adult male from Peru ( <i>E. p. platyrhynchus</i> ).....	118	185	36	18.5	16
FEMALES.					
Nine adult females from Costa Rica.....	110.6	164.4	36.2	17.1	13.8
One adult female from western Panama (Chiriqui).....	114	186.5	39	.....	.....
Two adult females from eastern Panama (Canal Zone).....	111	178.7	36.5	17.5	14.5
One adult female from Brazil (Rio Purus) ( <i>E. p. platyrhynchus</i> ).....	107.5	179	33.5	16	12.5

*Prionornis platyrhynchus minor* FERRY, Pub. 146, Field Mus. N. H., 1910, 263 (Guayabo, Costa Rica).

*Prionornis minor* BANGS, Proc. Biol. Soc. Wash., xxii, 1909, 32, in text (La Vija-gua, Costa Rica). —CARRIKER, Ann. Carnegie Mus., vi, 1910, 495 (Costa Rica; habits).

[*Prionornis*] *minor* SHARPE, Hand-list, ii, 1900, 76.

### ELECTRON PLATYRHYNCHUS SUBOLES Nelson.

#### DARIÉN MOTMOT.

Similar in extensively bluish chin to *E. p. minor*, but color of back, etc., much purer green (deep Hay's green), upper surface of tail and outer webs of primaries greenish blue (between motmot blue and china blue), posterior underparts light greenish blue or bluish green (niagara green), color of pileum and hindneck lighter (dull russet-tawny), and bill relatively longer and narrower.

*Adult male*.—Length (skin), 322; wing, 117; tail, 188; exposed culmen, 42 (40.5); tarsus, 18; middle toe, 13.5.<sup>a</sup>

Eastern Panamá (Cana, Darién); Colombia (Rio Atrato; Rio Nercua; Remédios, Antioquia)?

(?)*Prionirhynchus platyrhynchus* (not *Momotus platyrhynchus* Leadbeater) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 534 (Remedios, Antioquia, Colombia).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 315, part (Remedios, Colombia).

(?)*Prionornis platyrhynchus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 467, part (Rio Nercua, Colombia).

*Electron platyrhynchus suboles* NELSON, Smithsonian Misc. Coll., vol. 60, no. 3, Sept. 27, 1912, 5 (Cana, Darien, Panama, 2,000 ft.; coll. U. S. Nat. Mus.).

### ELECTRON CARINATUS CARINATUS (Du Bus).

#### KEEL-BILLED MOTMOT.

*Adults (sexes alike)*.—Forehead (more or less extensively) dull cinnamon-rufous to cinnamon; superciliary region bright turquoise or cærulean blue, light greenish blue, or (more rarely) cobalt or ultramarine blue; rest of pileum, deep olive-green or olivaceous parrot green, passing into lighter and brighter olive-green or olivaceous parrot green on hindneck, back, scapulars, rump, and upper tail coverts, the wing coverts and secondaries similar but usually purer (less olivaceous) green, the outer webs of primaries duller and more bluish green; tail olivaceous parrot green (sometimes inclining to bluish green), the terminal spatules of middle rectrices bluish green or greenish blue, broadly tipped with dull black; loreal, orbital, and auricular regions uniform black; chin and upper throat dull verdigris green; rest of underparts plain olivaceous cinnamon or light olive-green, more or less tinged or washed with cinnamon, the center

<sup>a</sup> One specimen.



of foreneck with a large tuft of elongated, rather broad, black feathers; underwing coverts ochraceous-buff; inner webs of remiges slaty, indistinctly edged with grayish buffy; bill black, paler at tip; legs and feet dusky (in dried skins).

*Adult male*.—Length (skins), 304–332 (320); wing, 111.5–120.5 (114.5); tail, 164–182 (171.9); exposed culmen, 35.5–40 (37.2); tarsus, 17–18.5 (17.4); middle toe, 13.5–15 (14.3).<sup>a</sup>

*Adult female*.—Length (skins), 317–346 (331); wing, 112–119 (115); tail, 169.5–189 (179.2); exposed culmen, 37.5–38 (37.8); tarsus, 18.5; middle toe, 14.5.<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Tolosa; Uvero) and Tabasco (Teapa), southward through Guatemala (Chixoy Valley, near Santa Ana), British Honduras (Belize), and Honduras (Lake Yojoa; between Lake Yojoa and Taulevi; San Pedro Montaña; Santa Ana; Céiba; Rio Segovia) to northern Nicaragua (Chontales).

*Prionites carinatus* Du Bus, Bull. Acad. Roy. Belg., xiv, pt. 2, 1847, 108 (Guatemala; coll. Brussels Mus. Nat. Hist.).

[*Crypticus*] *carinatus* BONAPARTE, Consp. Av., i, 1850, 165.

*Prionirhynchus carinatus* SCLATER, Proc. Zool. Soc. Lond., 1857, 257, pl. 128 (monogr.; Guatemala); 1858, 357 (near Lake Yojoa, Honduras; crit.); Cat. Am. Birds, 1862, 263 (Lake Yojoa).—SCLATER and SALVIN, Ibis, 1859, 132 (Lake Yojoa).—TAYLOR, Ibis, 1860, 117 (between Taulevi and Lake Yojoa, Honduras).—(?)SALVIN, Ibis, 1872, 321 (Chontales, Nicaragua; crit.).—BOUCARD, Liste Ois. récol. Guat., 1878, 26 (Guatemala).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 591 (Rio Segovia, Honduras).—SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 316 (Belize, Brit. Honduras, etc.).

[*Prionirhynchus*] *carinatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102.

[*Momotus*] *carinatus* GRAY, Hand-list, i, 1869, 81, no. 946.

*Prionornis carinatus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 58\*, July, 1895, 468, part (Belize; Chixoy Valley, near Santa Ana, Guatemala; Lake Yojoa; Rio Segovia; Chontales).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 143 (Ceiba, Honduras).

[*Prionornis*] *carinatus* SHARPE, Hand-list, ii, 1900, 76.

<sup>a</sup> Nine specimens.

<sup>b</sup> Three specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Two adult males from Vera Cruz.....	113.5	164.5	39.7	17.2	14.7
One adult male from Tabasco.....	115	.....	39	17.5	15
Six adult males from Honduras.....	114.7	174.8	37.7	17.4	14
One adult male from Costa Rica ( <i>E. c. viridis</i> ).....	116	180	37	17	14
FEMALES.					
One adult female from Vera Cruz.....	114	.....	37.5	.....	.....
Three adult females from Honduras.....	115.5	179.2	38	18.5	14.5

## ELECTRON CARINATUS VIRIDIS Ridgway.

## COSTA RICAN KEEL-BILLED MOTMOT.

Similar to *E. c. carinatus* but general color of under parts dull green, tinged on foreneck, chest, and breast with olive-green, but without the tawny oil-green suffusion always present and often conspicuous in *E. c. carinatus*, the posterior under parts light bluish green; upper parts clearer (less yellowish) green; bill relatively broader and more strongly arched.

*Adult male*.—Length (skin), 310; wing, 116; tail, 180; exposed culmen, 37; tarsus, 17; middle toe, 14.<sup>a</sup>

Northwestern Costa Rica (San Carlos; La Vijagua).

*Prionirhynchus carinatus* (not *Prionites carinatus* Du Bus) BOUCARD, Proc. Zool. Soc. Lond., 1878, 49 (San Carlos, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Costa Rica).

*Prionornis carinatus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 468, part (San Carlos, Costa Rica).—BANGS, Proc. Biol. Soc. Wash., xxii, 1909, 32 (La Vijagua, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 496 (Costa Rica).

*Electron carinatus viridis* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 89 (La Vijagua, n. w. Costa Rica; coll. E. A. and O. Bangs).

## Genus EUMOMOTA Sclater.

*Eumomota* SCLATER, Proc. Zool. Soc. Lond., 1857, 257. (Type, *Prionites superciliosus* Sandbach.)

*Eumomotus* (emendation) MURIE, Ibis, Oct., 1872, 407.

*Spathophorus* <sup>b</sup> CABANIS and HEINE, Mus. Hein., ii, Nov. 26, 1859, 112. (Type, *Prionites superciliosus* Sandbach.)

Medium-sized Momotidæ (length about 343–386 mm.) resembling the genus *Electron* but with bill narrower (width at nostrils much less than distance from nostril to tip of maxilla), less depressed, and less concave next to the rounded (not flattened) culmenal ridge; tarsus longer than middle toe with claw; middle rectrices nearly twice as long as next pair, their webs denuded for a distance equal to more than half the length of the second pair of rectrices, the large racquet-shaped tip much longer than culmen; conspicuous, brightly colored (turquoise blue) superciliary tufts, and thorax with a black patch margined laterally with bright turquoise blue narrow feathers.

Bill about as long as head, distinctly decurved terminally, broad and moderately depressed, its width at nostrils equal to much less than half but decidedly more than one-third the distance from nostril to tip of maxilla, slightly but decidedly greater than its height at same point; culmen conspicuously carinate, but the ridge broad and rounded, distinctly but not abruptly elevated above the depressed

<sup>a</sup> One specimen (the type).

<sup>b</sup> Von σπάθη (spatel) und φέρω (tragen). (Cabanis and Heine.)

but not concave adjacent sides of the maxilla; gonys about twice as long as mandibular rami, faintly convex but not prominent basally, slightly concave terminally (the tip of mandible slightly decurved), broadly rounded but with a very faint indication of a narrow median ridge; serrations of tomia very minute, obsolete only at extremities of tomia. Nostril exposed, rather large, broadly oval or roundish, in anterior end of nasal fossa. No prefrontal (postnasal) bristles; rictal bristles moderately developed, those of the malar apex very large and strong; feathers of chin with small, slender, recurved bristly tips. Head completely feathered, the feathers of the superciliary and auricular regions elongated, somewhat stiffened, forming two very conspicuous tufts on each side of head, those of median portion of throat also elongated but broad and blended, margined along each side by narrow, stiffened feathers. Wing rather short and rounded, the longest primaries exceeding longest secondaries by less than half the length of tarsus; fifth, sixth, and seventh primaries longest, the eighth nearly as long as fifth, ninth intermediate between third and fourth, the tenth (outermost) more than one-third as long as ninth. Tail nearly twice as long as wing, excessively graduated, the middle pair of rectrices nearly twice as long as the next pair, their shafts denuded for a distance equal to more than half the length of the second pair, the very large racquet-shaped tip much longer than the culmen; rectrices ten, the outer pair a little more than two-thirds as long as next pair. Tarsus nearly as long as middle toe with claw, much shorter than distance from nostril to tip of maxilla.

*Coloration*.—General color olive-green, the remiges and rectrices bluish green broadly tipped with black, the posterior under parts and center of back tawny; conspicuous superciliary tufts light turquoise blue passing into white anteriorly; orbital, loreal, and auricular regions black; throat-patch black margined laterally with a line of narrow turquoise blue feathers.

*Range*.—Yucatan to Costa Rica. (Monotypic.)

#### KEY TO THE SUBSPECIES OF EUMOMOTA SUPERCILIOSA.

- a*. Olive-greenish, or greenish olive-tawny, color of breast passing gradually into the cinnamon-rufous color of abdomen, etc., or at least the two differently colored areas not abruptly contrasted; cinnamon-rufous interscapular area usually smaller or less distinct. (Yucatan, Campeche, and Tabasco.)

***Eumomota superciliosa superciliosa* (p. 478).**

- aa*. Olive-greenish color of breast abruptly contrasted with cinnamon-rufous of abdomen, etc.; cinnamon-rufous interscapular area usually larger and more distinct.

- b*. Coloration darker, superciliary tufts bluer, and bill relatively broader. (Southern Vera Cruz to Honduras.).....***Eumomota superciliosa bipartita* (p. 480.)**

- bb*. Coloration paler, superciliary tufts more silvery whitish, and bill relatively narrower. (Northwestern Costa Rica and western Nicaragua; Salvador?).

***Eumomota superciliosa australis* (p. 481).**



**EUMOMOTA SUPERCILIOSA SUPERCILIOSA (Sandbach)****TURQUOISE-BROWED MOTMOT.**

*Adults (sexes alike).*—Median portion of pileum plain dark olive-green to dull grayish green, the lateral portions (supraloral and superciliary regions), broadly, bright bluish white or pale turquoise or Nile blue, the feathers of these areas elongated and stiffened; loreal, sub-orbital, and auricular regions deep black, the first two bordered below by spots and streaks of bright light turquoise or Nile blue; a post-ocular area of chestnut; hindneck, scapulars, rump, and upper tail-coverts, bright olive-green; interscapular region cinnamon-rufous, usually more or less tinged with (sometimes considerably obscured by) olive-green; wing-coverts purer (less olivaceous) green; secondaries light greenish blue or bluish green (dull Nile blue or glaucous green), abruptly tipped with black (except the innermost one), the distal secondaries with basal portion also black; alula greenish blue or bluish green (like secondaries), tipped with black; primary coverts black; primaries greenish blue or bluish green passing into dull black terminally; tail bluish green or greenish blue, the middle rectrices with terminal half of the spatulate tip black; chin light green or bluish green, streaked with black; sides of throat and foreneck, together with malar region (except anterior portion) and sides of neck, plain olive-tawny or tawny olive-greenish; median portion of throat and foreneck black, forming a large cuneate area having its apex on upper throat, this black area margined along each side by a line of elongated narrow feathers of a beautiful light turquoise or Nile blue; chest and upper breast plain greenish olive-tawny, showing more or less of the light cinnamon-rufous of the underlying portion of the feathers; rest of under parts uniform cinnamon-rufous; under wing-coverts ochraceous buff; bill black; iris brown; legs and feet grayish black.

*Young.*—Essentially like adults, but general coloration paler and duller; interscapular region less distinctly rufescent; feathers of superciliary tufts much shorter; throat without any black and with only a few light greenish-blue feathers (perhaps none in younger birds); middle pair of rectrice with webs continuous, though narrow in middle portion.

*Adult male.*—Length (skins), 343–386 (365); wing, 104.5–118.5 (112.3); tail, 190–219 (206.1); exposed culmen, 39–42 (40.5); tarsus, 20–23 (20.9); middle toe, 14.5–19 (17).<sup>a</sup>

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<sup>a</sup> Twelve specimens.

*Adult female*.—Length (skins), 330–369 (355); wing, 105–116.5 (112.7); tail, 179–210 (194.6); exposed culmen, 38.5–42 (39.7); tarsus, 20.5–24 (22.3); middle toe, 16–17.5 (16.7).<sup>a</sup>

Yucatan (Mérida; Tekanto; Temáx; Tunkas; Ticúl; Peto; Buctzotz; Chichen-Itza; San Felipe; Cozumel Island; Meco Island), Campeche (Campeche; Bay of Campeche), and Tabasco (Montecristo; Teapa).

*P[yrionites] superciliosus* SANDBACH, Athenæum, no. 517, Sept. 23, 1837, 698 (Mexico; coll. Mus. Roy. Inst. Liverpool).

*P[rionites] superciliosus* SANDBACH, Rep. Brit. Assoc., 1837 (pub. 1838), 99.

*Prionites (Crypticus) superciliaris* JARDINE and SELBY, Illustr. Orn., iv, 1838, pl. 18.

*Crypticus superciliaris* LESSON, Descr. Mam. et Ois. (Compl. Buffon), 1847, 267.

*C[rypticus] superciliaris* BONAPARTE, Consp. Av., i, 1850, 165, part.

*M[omotus] superciliaris* GRAY, Gen. Birds, i, 1847, 68.

*Momotus superciliaris* GRAY, List Fissir. Birds Brit. Mus., 1848, 40. —SCHLEGEL, Mus. Pays-Bas, Momoti, 1863, 7 (Bay of Campeche). —NEHRKORN, Journ. für Orn., 1881, 66 (Yucatan; descr. eggs).

*[Momotus] superciliaris* GRAY, Hand-list, i, 1869, 80, no. 944, part.

*Eumomota superciliaris* SCLATER, Proc. Zool. Soc. Lond., 1857, 257, part (monogr.). —SCLATER and SALVIN, Ibis, 1859, 132 (Atlantic coast of Yucatan to Bay of Campeche). —LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 204 (Merida, Yucatan). —BOUCARD, Proc. Zool. Soc. Lond., 1883, 453 (Yucatan; habits). —SALVIN, Ibis, 1889, 371 (Meco I., Yucatan; crit.). —STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Tekanto, Tunkas, and Ticul, Yucatan). —SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 317, part (Bay of Campeche; Meco I., Peto, Buctzotz, Merida, and Temax, Yucatan). —SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 464, part (Bay of Campeche; localities in Yucatan). —CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 285 (Chichen-Itza, Yucatan). —COLE, Bull. Mus. Comp. Zool., i, 1906, 126 (Chichen-Itza; habits, etc.).

<sup>a</sup> Eleven specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Two adult males from Oaxaca ( <i>E. s. bipartita</i> ).....	114.2	219	39.5	21.2	16.7
Two adult males from E. Tabasco ( <i>E. s. superciliosa</i> ).....	108.7	195.2	40.7	20.2	14.7
Two adult males from Campeche ( <i>E. s. superciliosa</i> ).....	108.5	211.5	40.7	22	16.5
Eight adult males from Yucatan ( <i>E. s. superciliosa</i> ).....	114.2	207.5	40.4	20.7	17.6
Four adult males from Chiapas ( <i>E. s. bipartita</i> ).....	109.6	199.4	40.9	20.6	16.4
Three adult males from Guatemala ( <i>E. s. bipartita</i> ).....	108.3	206.5	38.8	19.8	15.5
Three adult males from Honduras ( <i>E. s. bipartita</i> ).....	107.8	197.2	38.8	20.2	15.5
Five adult males from Nicaragua ( <i>E. s. australis</i> ).....	111.5	194.8	39.9	21.5	16
Ten adult males from Costa Rica ( <i>E. s. australis</i> ).....	110.9	194.6	40.3	20.6	16.4
FEMALES.					
One adult female from Vera Cruz ( <i>E. s. bipartita</i> ).....	115	.....	37.8	.....	.....
Seven adult females from Yucatan ( <i>E. s. superciliosa</i> ).....	114.5	203.5	40.1	22.2	16.5
Four adult males from Campeche ( <i>E. s. superciliosa</i> ).....	109.6	194.6	39.7	22.4	17
Two adult females from Chiapas ( <i>E. s. bipartita</i> ).....	109	174.7	37.5	19.5	15.5
Two adult females from Guatemala ( <i>E. s. bipartita</i> ).....	109.7	206.7	39.2	20.5	15.7
Two adult females from Honduras ( <i>E. s. bipartita</i> ).....	115.5	179.5	38	18.5	14.5
Two adult females from Nicaragua ( <i>E. s. australis</i> ).....	113.7	200.7	39.2	21	16.5

- [*Eumomota*] *superciliaris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.—SHARPE, Hand-list, ii, 1900, 76, part.  
*Crypticus superciliosus* SWAINSON, Anim. in Menag., 1837, 358, part.—LESSON, Descr. Mam. et Ois., 1847, 267, part.  
*Momotus yucatanensis* CABOT, Proc. Bost. Soc. N. H., i, 1843, 156 (Yucatan; coll. S. Cabot); Bost. Journ. N. H., iv, no. 4, Jan., 1844, 466 (Chichen-Itza).  
[*Prionites*] *yucatanensis* BONAPARTE, Consp. Av., i, 1850, 165.  
*Pariphonus toh* DONDÉ, La Emulacion, iii, no. 12, 1878, 7 (Yucatan).

**EUMOMOTA SUPERCILIOSA BIPARTITA** Ridgway.

**GREEN-BREASTED TURQUOISE-BROWED MOTMOT.**

Similar to *E. s. superciliosa* but with under parts of body divided into two very distinctly or abruptly defined differently colored areas, the breast uniform olive-greenish, the remaining portion uniform cinnamon-rufous; cinnamon-rufous interscapular area usually much larger or better defined.

*Adult male*.—Length (skins), 312–365 (348); wing, 106–114.5 (109.6); tail, 173.5–219 (202.5); exposed culmen, 34–43 (39.6); tarsus, 19.5–22 (20.5); middle toe, 14.5–17.5 (16).<sup>a</sup>

*Adult female*.—Length (skins), 330–370 (348); wing, 102–117.5 (109.4); tail, 174–217.5 (190.7); exposed culmen, 36–40 (38.4); tarsus, 19–21 (20); middle toe, 15–16.5 (15.6).<sup>b</sup>

Southern Mexico, in States of Vera Cruz (Uvero; Tolosa), Oaxaca (Tehuántepec; Santa Efigénia; Cacoprieto; Tapana), and Chiapas (Huehuetán), and southward through Guatemala (El Rancho, Zapata; Los Amates, Yzabál; Chapulco; Plain of Salamá; San Gerónimo; Retalhuleu; San José; Montagua Valley; Escuintla; Palín; Medio Monte; Naranjo) to Honduras (Omoa; Copán; Santa Ana; Rio Segóvia; San Pedro Sula; San Pedro Montaña; Céiba). Salvador (La Libertad; San Miguel) ?<sup>c</sup>

(?) *Crypticus superciliosus* (not *Prionites superciliosus* Sandbach?) SWAINSON, Anim. in Menag., 1838, 358, part ("Spanish America").—LESSON, Descr. Mam. et Ois., 1847, 267, part.

*C[rypticus] superciliaris* BONAPARTE, Consp. Av., i, 1850, 165, part (Mexico; Honduras).

*Eumomota superciliaris* SCLATER, Proc. Zool. Soc. Lond., 1857, 257, part (monogr.); Cat. Am. Birds, 1862, 263, excl. syn. part (Honduras).—MOORE, Proc. Zool. Soc. Lond., 1859, 54 (Omoa, Honduras; habits).—SALVIN, Ibis, 1860, 195 (Plain of Salama, Guatemala); Cat. Strickland Coll., 1881, 413 (Guatemala).—OWEN, Ibis, 1861, 64 (San Geronimo, Guatemala; habits; descr. nest and eggs).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 30 (Tapana and Cacoprieto, Oaxaca).—SHARPE, Cat. Birds Brit. Mus., xvi, 1892, 317, part (Retalhuleu, San Jose, and San Geronimo, Guatemala; La Libertad and San Miguel, Salvador?; San Pedro, Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 464, part (Santa Efigenia, etc., Oaxaca; Zacapa, Montagua Valley, Retalhuleu, Escuintla, Palín, Medio Monte, etc., Guate-

<sup>a</sup> Twelve specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> Salvadorean specimens may be referable to *E. s. australis*.



mala; La Libertad, etc., Salvador?; San Pedro, Honduras).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 143 (Ceiba, Honduras).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 88 (El Rancho and Los Amates, Guatemala).

[*Eumomota*] *superciliaris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.—SHARPE, Hand-list, ii, 1900, 76, part.

*S[pathophorus]* *superciliaris* CABANIS and HEINE, Mus. Hein., ii, Nov., 1859, 112 (Guatemala).

[*Spathophorus*] *superciliaris* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 155 (Guatemala).

*Eumomota superciliaris bipartitus* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 90 (Cacoprieto, Oaxaca, s. w. Mexico; coll. U. S. Nat. Mus.).

### EUMOMOTA SUPERCILIOSA AUSTRALIS (Bangs).?

#### SOUTHERN TURQUOISE-BROWED MOTMOT.

Similar to *E. s. bipartita* in strong definition or abrupt separation of the two differently colored areas on under parts of body, but coloration paler throughout (the superciliary tufts usually much paler, often silvery white in part), and bill relatively narrower.

*Adult male*.—Length (skins), 306–360 (334); wing, 105–114.5 (111.1); tail, 185.5–211 (194.7); exposed culmen, 37–43 (40.1); tarsus, 19–22 (20.7); middle toe, 15.5–17 (16.2).<sup>a</sup>

*Adult female*.—Length (skins), 314–373 (329); wing, 105–115 (109.5); tail, 176.5–200 (185.5); exposed culmen, 37–40.5 (39.1); tarsus, 20–21.5 (20.7); middle toe, 15–17 (16.1).<sup>b</sup>

Nicaragua (San Gerónimo; Chontales; Sucuyá; Chinandega; San Carlos; Managua; boundary line between Nicaragua and Honduras, 180 miles from Pacific coast) and northwestern Costa Rica (Barranca de Punta Arenas; Bebedero; La Palma de Nicoya; Bagaces; Miravalles; Bolsón; Corallillo). Salvador (La Libertad; San Miguel)?.<sup>c</sup>

(?) *Crypticus apiastur* LESSON,<sup>d</sup> Rev. Zool., v, June, 1842, 174 ("San Carlos, Americæ centralis Oceani Pacifici"); Actes Soc. Linn. Bordeaux, xii, no. 41, Sept. 15, 1842, 193 ("San Carlos, Salvador").—LAFRESNAYE, Rev. Zool., 1848, 249.

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Ten specimens.

<sup>c</sup> Salvador lying on the Pacific slope of Central America, it is not unlikely that specimens of this species occurring there belong to the present form. I have not seen Salvadorean examples, however.

<sup>d</sup> In view of the circumstance that Lesson mentions San Carlos in Nicaragua as a locality where his brother collected specimens of other species, I am inclined to believe that the type of the present form also came from the same place; but as Lesson stopped at various places along the Pacific coast of Central America, it may be that San Carlos in Salvador is meant. The only San Carlos in Nicaragua that I am able to locate on the maps is on the east side of Lake Nicaragua, near the upper part of the San Juan River, but on the Pacific side of the eastern divide, though within the Caribbean drainage area; and though no specimens have been seen from that part of Nicaragua nearer than Chontales to the northward, there can be little doubt that if the species occurs there it is represented by the present form. Considering the doubt as to whether the San Carlos mentioned by Lesson is really the Nicaraguan place of that name, I follow Mr. Bangs in rejecting the name *apiastur* as the subspecific designation of this form, at least until an examination of Lesson's type (should it still be in existence) proves that it really belongs here.

*Spathophorus superciliaris* (not *Prionites superciliosus* Sandbach) CABANIS, Journ. für Orn., 1861, 255 (Costa Rica).

*Eumomota superciliaris* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 117 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 311 (Costa Rica).—SCLATER, Ibis, 1873, 373 (Chontales, Nicaragua).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 49 (Barranca de Punta Arenas, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 399 (La Palma de Nicoya, Costa Rica; habits); vi, 1883, 387 (Sucuya, Nicaragua; habits).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 119 (Costa Rica).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Chinandega, Nicaragua).—SHARPE, Cat. Birds Brit. Mus., xvi, 1892, 317, part (Chontales and Chinandega, Nicaragua; Bebedero, Costa Rica; La Libertad and San Miguel, Salvador?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 464, part (Nicaraguan and Costa Rican localities and references).—UNDERWOOD, Ibis, 1896, 443 (Bagaces and Bebedero, Costa Rica).

[*Eumomota*] *superciliaris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103, part.—SHARPE, Hand-list, ii, 1900, 76, part.

*Eumomota superciliaris australis* BANGS, Proc. Biol. Soc. Wash., xix, July 30, 1906, 104 (Bebedero, n. w. Costa Rica; coll. E. A. and O. Bangs).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 496 (Bebedero, Bolsón, and Miravalles, n. w. Costa Rica).

#### Genus ASPATHA Sharpe.

*Aspatha* <sup>a</sup> SHARPE, Cat. Birds Brit. Mus., xviii, 1892, 331. (Type, *Prionites gularis* Lafresnaye.)

Small Momotidæ (length about 260 mm.) with bill shorter than head, moderately depressed (its width at nostrils about equal to or very slightly greater than its depth at same point), culmen not distinctly ridged (except basally), tarsus decidedly longer than distance from nostril to tip of maxilla, tail (of ten rectrices) much less than one-third longer than wing, the middle rectrices always with webs continuous (uninterrupted).

Bill shorter than head, about as wide as deep at nostrils (or very slightly wider), broad and very slightly tapering to near tip in vertical profile, distinctly decurved at tip; culmen (from extreme base) about one-third as long as wing, slightly convex throughout, strongly decurved at tip, rather distinctly ridged for basal half, very indistinctly if at all ridged terminally; gonys about one and a half times as long as mandibular rami, broadly rounded, without trace of median ridge; serrations of tomia distinct only on middle third (approximately). Nostril moderate, oval, obliquely vertical, in anterior end of nasal fossa. No prefrontal (postnasal) bristles; rictal bristles moderately developed, those of malar apex larger and stronger, and feathers of chin with long, recurved, bristly tips. Head completely feathered, the auricular feathers elongated and somewhat stiffened, producing a conspicuous tuft; a small tuft of elongated feathers in middle of lower foreneck. Wing rather short and rounded, the longest primaries exceeding longest secondaries by about length of hallux without claw; fifth, sixth, and seventh primaries longest, the

<sup>a</sup> 'A, without; σπάθη, a blade. (Richmond.)

eighth about equal to fourth or slightly longer, the ninth intermediate between first and second, the tenth (outermost) nearly two-thirds as long as ninth. Tail much less than one-third longer than wing, excessively graduated, the outer pair of rectrices about three-fifths as long as next and less than one-third as long as middle pair, the latter exceeding next pair by length of exposed culmen, or more, always with webs continuous, the tip subtruncate; rectrices ten. Tarsus rather slender, slightly longer than middle toe with claw, decidedly longer than distance from nostril to tip of maxilla.

*Coloration*.—General color plain green, the throat light blue, the orbital and loreal regions ochraceous; auricular tuft and tuft on lower foreneck black; bill and feet light brown.

*Range*.—Guatemala. (Monotypic.)

#### ASPATHA GULARIS (Lafresnaye).

##### BLUE-THROATED MOTMOT.

*Adults (sexes alike)*.—Above plain yellowish green (between parrot green and oil green), sometimes tinged more or less strongly with verdigris green, the middle rectrices passing into greenish blue distally; loreal and orbital regions ochraceous-buff; auricular region black, the feathers somewhat elongated, producing a conspicuous narrow tuft; chin and throat clear light greenish blue (turquoise or Nile blue); rest of under parts, superficially, light oil green anteriorly, passing into pale greenish blue or bluish green posteriorly (whole abdomen sometimes turquoise blue), the under tail-coverts and underlying portion of other under parts (except throat and chin) yellowish buff; a small tuft of slightly elongated, rather narrow, mostly black feathers on center of lower foreneck; under wing-coverts and broad edgings to inner webs of remiges ochraceous-buff; under surface of tail yellowish gray; maxilla dark brown basally, pale brownish terminally, the mandible similar but paler; legs and feet brownish (in dried skins).

*Adult male*.—Length (skins), 270–280 (275); wing, 101.5–103 (102.2); tail, 140.5–146.5 (143.5); exposed culmen, 31.5–32 (31.7) tarsus, 24.5; middle toe, 16.5–17.5 (17).<sup>a</sup>

<sup>a</sup> Two specimens. (No specimens determined as female have been examined.)

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
One adult male from Volcan de Fuego, Guatemala.....	103	146.5	32	24.5	16.5
One adult male from San Cristobal, Chiapas.....	101.5	140.5	31.5	24.5	17.5

The specimen from Chiapas is not noticeably different in coloration from some Guatemalan examples, among which the principal variation consists in the amount of blue on the abdomen, some being without more than a trace of this, while others have the whole abdomen unbroken turquoise blue.



Guatemala (Santa Maria, near Quezaltenango; Calderas, on Volcán de Fuego, 7,000–8,000 ft.; Barranca Honda; Dueñas; Cunen), State of Chiapas, southern Mexico (San Cristóbal).

*Prionites gularis* LAFRESNAYE, Rev. Zool., iii, May, 1840, 130 (Guatemala).

*P[rionites] gularis* BONAPARTE, Consp. Av., i, 1850, 165.

*M[omotus] gularis* GRAY, Gen. Birds, i, 1847, 68.

*Momotus gularis* STRICKLAND, Jardine's Contr. Orn., 1849, 33, pl. 17.—SCHLEGEL, Mus. Pays-Bas, Momoti, 1863, 7 ("Quito").

[*Momotus*] *gularis* GRAY, Hand-list, i, 1869, 81, no. 948.

*Hylomanes gularis* SCLATER, Proc. Zool. Soc. Lond., 1857, 256 (Guatemala).—SCLATER and SALVIN, Ibis, 1859, 131 (Guatemala).—BOUCARD, Liste Ois. récol. Guat., 1878, 26.—SALVIN, Cat. Strickland Coll., 1881, 414.

[*Hylomanes*] *gularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102.

*Aspatha gularis* SHARPE, Cat. Birds Brit. Mus., xvii, 1892, 331 (Santa Maria near Quezaltenango, Barranca Honda, Dueñas, and Volcan de Fuego, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 470 (Cunen, etc., Guatemala).

[*Aspatha*] *gularis* SHARPE, Hand-list, ii, 1900, 77.

#### Genus HYLOMANES Lichtenstein.

*Hylomanes* LICHTENSTEIN, Abh. Akad. Wissensch. Berol., 1838 (1839), 449, pl. 4. (Type, *H. momotula* Lichtenstein.)

Very small Momotidæ (length about 160 mm.) with tail shorter than wing, the middle rectrices not greatly longer than next pair and always with web continuous; bill slightly shorter than head, slightly wider than deep at nostril, the culmen not distinctly ridged; and with feathers of throat elongated, but without any tuft of elongated feathers on lower foreneck.

Bill slightly shorter than head, very slightly decurved terminally, slightly but decidedly wider than deep at nostrils; culmen very faintly decurved to near tip, rounded (not ridged); gonys about twice as long as mandibular rami, very broadly rounded, without trace of median line; serrations of tomia minute, obsolete basally and terminally. Nostril large, roundish, in anterior end of nasal fossa. Rictal bristles small, but bristles of malar apex very large and strong; feathers of chin without distinct bristly tips. Head completely feathered; feathers of auricular region elongated, somewhat stiffened, producing a conspicuous tuft, those of the throat elongated but soft; no tuft on lower foreneck.<sup>a</sup> Wing rather short and rounded, the longest primaries exceeding longest secondaries by about one-third the length of tarsus; fifth, sixth, and seventh primaries longest, the eighth next, the ninth slightly shorter than second, the tenth (outermost) nearly two-thirds as long as ninth. Tail slightly shorter than wing (longer than wing to end of longest secondaries), excessively graduated (the outermost rectrices about two-fifths as long as middle

<sup>a</sup> *Hylomanes* is the only genus in the family which does not possess this conspicuous feature.

pair), the latter exceeding second pair by less than half the length of tarsus; rectrices 10, the middle pair always with webs continuous, the tip rounded. Tarsus slightly longer than middle toe with claw, about one-fourth as long as wing, slender.

*Coloration*.—Above dull green, the occiput, nape, and hindneck rufescent, the superciliary region greenish blue; auricular tufts black; elongated feathers of throat buffy whitish; chest and breast light greenish, the remaining under parts pale buff medially deepening into more pronounced buff, or ochraceous, on sides and flanks.

*Range*.—Southeastern Mexico to eastern Panamá. (Monotypic.)

KEY TO THE SUBSPECIES OF *HYLOMANES MOMOTULA*.

*a*. Rufous of pileum and hindneck lighter or clearer (usually both); forehead less distinctly or extensively brown or olivaceous; darker color of under parts averaging paler. (Southeastern Mexico to Honduras.)

*Hylomanes momotula momotula* (p. 485).

*aa*. Rufous of pileum and hindneck darker or duller (or both); forehead more distinctly and extensively brown or olivaceous (this often covering whole crown); darker color of under parts averaging darker and more olivaceous or greenish. (Northwestern Costa Rica to eastern Panama.)

*Hylomanes momotula obscurus* (p. 487).

**HYLOMANES MOMOTULA MOMOTULA** Lichtenstein.

**TODY-MOTMOT.**

*Adults (sexes alike)*.—Anterior portion of forehead pale cinnamon or cinnamon-buffy, the rest of forehead, together with more or less of crown, olive-greenish more or less suffused with rusty, the occiput, nape, and hindneck dull cinnamon-rufous or russet; rest of upper parts plain dark, slightly olivaceous, green (dark dull parrot green), duller (more olive-green) on remiges and rectrices, the outer and longer primaries edged (at least distally) with light brownish; a large patch of bright greenish blue (nile or turquoise) on each side of crown, margined below, in part, by a narrow black space immediately above eye, this connected (usually) anteriorly with another narrow black area immediately beneath eye, this confluent with the black auricular patch; lores pale buffy or dull buffy white, this continued (as a more or less distinct broad streak) beneath the black suborbital and auricular area; supra-auricular region, mixed with dull greenish and rusty (one or the other usually predominating); malar region and sides of neck plain olive-greenish (the feathers with more or less of buffy beneath surface), the foreneck and chest similar, passing into more uniform light olive-greenish, sometimes tinged with light verdigris green, on upper breast and into plain buffy olive-greenish on sides and flanks, the lower breast and abdomen dull white; a tuft of elongated feathers of dull white or buffy on each side of throat, the space between mixed buffy and light olive or olive-

greenish; under tail-coverts pale brownish buffy; under wing-coverts pinkish buff, deeper toward edge of wing, the inner webs of remiges rather broadly edged with the same; maxilla dull black, mandible brownish (in dried skins); legs and feet light brownish (in dried skins).

*Adult male*.—Length (skins), 160–170 (165); wing, 69.5–75 (72.8); tail, 64.5–70 (66.6); exposed culmen, 26–27 (26.5); tarsus, 17.5–18 (17.8); middle toe, 12.5.<sup>a</sup>

*Adult female*.—Length (skins), 153–178 (167); wing, 68.5–75 (72.8); tail, 63.5–71 (66.5); exposed culmen, 26–29.5 (27.3); tarsus, 17–19 (17.8); middle toe, 11.5–13 (12.4).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Jalapa; Playa Vicente; Valle Real; Uvero; Buena Vista; Santa Lucrecia) and Tabasco (Teapa), southward through Guatemala (Choctum; Cobán; Chiséc; Khamkál; sources of Rio de la Pasión; Savana Grande; Volcán de Agua; Cubilguitz) and British Honduras (Cayo; Toledo District) to Honduras (Santa Ana; Omoa; San Pedro Sula).

*Hylomanes momotula* LICHTENSTEIN, Abh. Königl. Akad. Wissensch. Berol. for 1838 (1839), 449, pl. 4 (Valle Real [Vera Cruz?], Mexico; coll. Berlin Mus.).—BONAPARTE, *Consp. Av.*, i, 1850, 164.—SCLATER, *Proc. Zool. Soc. Lond.*, 1857, 201 (Jalapa, Vera Cruz), 256 (monogr.); 1859, 387 (Playa Vicente, Vera Cruz); *Cat. Am. Birds*, 1862, 263 (Mexico; Choctum, Guatemala).—MOORE, *Proc. Zool. Soc. Lond.*, 1859, 54 (Omoa, Honduras).—SALVIN and SCLATER, *Ibis*, 1860, 400 (Choctum, Guatemala).—SUMICHRIST, *Mem. Bost. Soc. N. H.*, i, 1869, 562 (tierra caliente of Vera Cruz).—BOUCARD, *Liste Ois. récol. Guatemala*, 1878, 26.—RIDGWAY, *Proc. U. S. Nat. Mus.*, xiv, 1891, 471 (Santa Ana, Honduras).—SHARPE, *Cat. Birds Brit. Mus.*, xvii, 1892, 332 (Playa Vicente, Vera Cruz;

<sup>a</sup> Three specimens.

<sup>b</sup> Ten specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Two adult males from British Honduras.....	71.2	65	26.2	17.7	12.5
One adult male from Honduras.....	75	70	27	18	12.5
Six adult males from w. Costa Rica ( <i>H. m. obscurus</i> ).....	72.4	61.7	26.2	18	12.5
Two adult males from Darien, Panama ( <i>H. m. obscurus</i> ).....	72.7	60	28.2	18.7	14
FEMALES.					
Five adult females from Vera Cruz.....	73.7	67.2	27.7	18	12.8
Three adult females from British Honduras.....	71.7	64.2	26.8	17.5	12.3
Six adult females from w. Costa Rica ( <i>H. m. obscurus</i> ).....	74.4	65.7	27	18	12.6
Three adult females from eastern Panama ( <i>H. m. obscurus</i> )....	73	58.7	28.5	19	14

While the number of specimens examined is considerable, those which have the sex determined are relatively few; consequently the measurements do not make a satisfactory showing as to geographic variations in this respect. As to coloration, specimens from the States of Vera Cruz and Tabasco, Mexico, are appreciably darker or less yellowish green above than most examples from Guatemala, British Honduras, and Honduras, but the difference seems to be too slight and too inconstant to justify further subdivision.



Cayo, Brit. Honduras; sources of Rio de la Pasion, Savana Grande, etc., Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 471 (Valle Real, Jalapa, Uvero, etc., Vera Cruz; Cayo, Brit. Honduras; Cubilguitz, Khamkal, Volcan de Agua, etc., Guatemala).

[*Hylomanes*] *momotula* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 102.—SHARPE, Hand-list, ii, 1900, 77 (Mexico; Guatemala).

[*Hylomanes*] *momotulus* HEINE and REICHENOW, Nom. Mus. Hein., 1890, 156 (Guatemala).

*Momotus* *momotula* GRAY, Gen. Birds, i, 1847, 68.

*Momotus momotula* GRAY, Gen. Birds, i, 1847, pl. 24; Lists Fissirostr. Birds Brit. Mus., 1848, 40.—SCHLEGEL, Mus. Pays-Bas, Momoti, 1863, 7 (Mexico).

[*Momotus*] *momotula* GRAY, Hand-list, i, 1869, 81, no. 947.

### HYLOMANES MOMOTULA OBSCURUS Nelson.

#### PANAMÁ TODY-MOTMOT.

Similar to *H. m. momotula* but rufous of pileum and hindneck darker or duller (usually both), forehead more distinctly and extensively brown or olivaceous (this often covering whole crown), and darker color of under parts averaging darker, more olivaceous or greenish, and rather more extended.

*Adult male*.—Length (skins), 146–170.5 (168.5); wing, 69.5–75 (73); tail, 58–64 (61.2); exposed culmen, 25–28.5 (26.7); tarsus, 17.5–19 (18.2); middle toe, 12–14.5 (12.9).<sup>a</sup>

*Adult female*.—Length (skins), 150–174.5 (163); wing 72–76.5 (73.9); tail, 58–73 (63.3); exposed culmen, 26–30 (27.5); tarsus, 17.5–19.5 (18.3); middle toe, 12–14.5 (13.2).<sup>b</sup>

Northwestern Costa Rica (Volcán de Miravalles; La Vijagua; Tenorio; Cerro Santa Maria). Eastern Panama (Cerro Brujo, Canal Zone; Cana, Darién).

*Hylomanes momotula* (not of Lichtenstein) UNDERWOOD, Ibis, 1896, 443 (Volcan de Miravalles, Costa Rica; crit.).—BANGS, Proc. Biol. Soc. Wash., xxii, 1909, 32 (La Vijagua, Tenorio, and Cerro Santa Maria, Costa Rica; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 498 (n. w. Costa Rica).

*Hylomanes momotula obscurus* NELSON, Smithsonian. Misc. Coll., vol. 56, no. 22, Sept. 7, 1911, 1 (Cerro Brujo, Canal Zone, Panama; coll. U. S. Nat. Mus.).

#### Suborder NYCTICORACIÆ.

#### NOCTURNAL CORACIÆ.

=*Chelidones nocturni* MERREM, Abhandl. Berlin Acad., 1812–13 (1816), p. 241.

=*Cuculinæ nocturnæ* NITZSCH, Syst. Pterylog., 1840, 124.

=*Caprimulginae* NITZSCH, Syst. Pterylog., 1840, 124.

=*Caprimulgidae* BONAPARTE, Prodr. Syst. Orn., 1840, 4; Consp. Av., i, 1850, 57.—LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 16.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 398.—COUES, Key N. Am. Birds, 2d ed., 1884, 447.

=*Fissirostres nocturnæ* GRAY, Hand-list Birds, i, 1869, 53.

<sup>a</sup> Six specimens from Costa Rica.

<sup>b</sup> Seven specimens (six from Costa Rica).

- =*Caprimulgi* RIDGWAY, Bull. Ills. State Labr. Nat. Hist., No. 4, May, 1881, 185.—SHUFELDT, Proc. Zool. Soc. Lond., 1885, 913; Linn. Soc. Journ. Zool., xx, 1888, 299.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 382.—GADOW, Bronn's Thier-Reich, Vög., ii, 1891, 241, 301; Classif. Vertebr., 1898, xv, 36 (sub-order).—BEDDARD, Struct. and Classif. Birds, 1898, 231.—KNOWLTON, Birds of the World, 1909, 50.
- > *Coracioidea* STEJNEGER, Stand. Nat. Hist., iv, 1885, 371, 384, in text (includes *Coraciæ*).
- < *Caprimulgidae* CABANIS, in Wiegmann's Archiv für Naturg., i, 1847, 346 (= *Caprimulgi* + *Steatornithes*).
- < *Caprimulgidae* CABANIS and HEINE, Mus. Hein., iii, 1860, 86 (= *Caprimulgidae* + *Nyctibiidae* + *Steatornithidae*).
- < *Steatorninae* CABANIS, in Wiegmann's Archiv für Naturg., i, 1847, 346 (= *Steatornithes* + *Nyctibiidae*).—BONAPARTE, Consp. Av., i, 1850, 57 (= *Steatornithidae* + *Podargidae* + *Nyctibiidae*).
- < *Steatornithinae* BONAPARTE, Consp. Av., i, 1850, 57 (= *Steatornithes* + *Podargi* + *Nyctibiidae*).

Synpelmous, anisodactyle *Coraciiformes* with flexor tendons of type Va (as in *Macrochires*), spina externa sterni vestigial, two carotid arteries, syrinx bronchial, and young ptilopædic (as in *Striges*).

Palate schizognathous (*Caprimulgi*, except *Chordeiles*) or desmognathous (*Chordeiles*, *Podargi*, and *Steatornithes*); basipterygoid processes present (but small) or absent (in *Podargi*); nares holorhinal; vomer present; metasternum 2-notched, 4-notched, or entire; spina interna sterni absent; coracoids separated; ectepicondylloid process of humerus small, terminal; hypotarsus complex; cervical vertebræ 13-14; two carotid arteries; cæca functional, large (apparently absent in genus *Egotheles* of *Podargidae*); myological formula AXY or (in *Steatornithes*) XY; intestinal convolutions of type VI; flexor tendons of type Va; spinal pteryla well-defined on neck, forked on upper back; aftershaft present but small; oil-gland (when present) nude; secondaries aquinto-cubital; primaries 10; rectrices 10; adult downs present but restricted to apteria; young ptilopædic (as in *Striges*).

#### KEY TO THE SUPERFAMILIES OF NYCTICORACIÆ.

- a. Dorsal vertebræ heterocoelous (saddle-shaped); palatines separated medially, expanded posteriorly, and with latero-posterior processes; rostrum fixed; myological formula AXY.
- b. Palate schizognathous (except in *Chordeiles*); a palatines very narrow or slender anteriorly, enormously expanded posteriorly; vomer truncated anteriorly; premaxillary relatively small, constituting much less than anterior half of skull, not completely ossified (i. e., with a pair of latero-median grooves or fossæ), strongly contracted anteriorly, with straight or slightly concave lateral outlines; basipterygoid processes present; oil-gland present.

*Caprimulgi* (p. 489).

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a And probably other *Chordeilinae*.

- bb. Palate desmognathous; palatines broad throughout, only slightly expanded posteriorly; vomer pointed anteriorly; premaxillary enormously large, constituting about anterior half of skull, completely ossified, only slightly contracted anteriorly, with lateral outlines convex; basipterygoid processes absent; oil-gland absent.....**Podargi** (extralimital).<sup>a</sup>
- aa. Dorsal vertebræ opisthocœlous (concave behind;) palatines united medially, not expanded posteriorly, and without latero-posterior processes; rostrum movably articulated with skull; myological formula XY....**Steatornithes** (extralimital).<sup>b</sup>

## Superfamily CAPRIMULGI.

## THE GOATSUCKERS.

=*Caprimulgidæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 387.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1337.—SHARPE, Hand-list, ii, 1900, 78.  
 =*Caprimulgi* SHARPE, Rev. Classif. Birds, 1891, 81; Hand-list, ii, 1900, 78.

Schizognathous (or very rarely desmognathous) Nycticoraciæ with palatines slender anteriorly and enormously expanded posteriorly, vomer truncate anteriorly, premaxillary moderately developed or relatively small (constituting much less than anterior half of the skull), incompletely ossified, strongly contracted anteriorly, with straight or slightly concave lateral outlines; basipterygoid processes and oil-gland present.

Two carotid arteries; myological formula AXY; feet anisodactyle (flexor tendons of type Va), the hallux connected with the flexor perforans digitorum; cæca present; oil-gland small, nude; a long second pectoral muscle; gall-bladder present (except in *Chordeiles*); spinal pteryla well-defined on neck, forked on upper back; aftershaft present; rectrices 10; primaries 10; secondaries 12-15.

<sup>a</sup> = *Podarginae* Bonaparte, Prodr. Syst. Orn., 1840, 4; Cabanis, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 343; Cabanis and Heine, Mus. Hein., ii, 1860, 123; Gray, Hand-list, i, 1869, 53.—*Podargidæ* Stejneger, Stand. Nat. Hist., iv, 1885, 387; Fuerbringer, Unters. Morph. Syst. Vög., ii, 1888, 1567; Sharpe, Hand-list, ii, 1900, 42.—*Podargi* Sharpe, Rev. Classif. Birds, 1891, 79; Hand-list, ii, 1900, 42. > *Podargidæ* Gadow, Bronn's Thier-Reich, Vög., ii, 1891, 242, 300 (includes Nyctibiidæ). > *Steatornithinae* Bonaparte, Consp. Av., i, 1850, 8 (= *Steatornithidæ* + *Podargidæ* + *Nyctibiidæ*).

The Podargi (Frogmouths) comprise two well-marked families, Podargidæ and Ægothelidæ, and are peculiar to the Indian and Australian Regions, being most numerous developed in the Indo-Malayan and Austro-Malayan Subregions.

<sup>b</sup> > *Steatorninae* Cabanis, in Wiegmann's Archiv für Naturg., i, 1847, 346 (includes Nyctibiidæ). > *Steatornithinae* Bonaparte, Consp. Av., i, 1850, 47 (includes Podargi and Nyctibiidæ); = *Steatornithinae* Cabanis and Heine, Mus. Hein., iii, 1860, 95; Sclater, Proc. Zool. Soc. Lond., 1866, 127, 130; Gray, Hand-list, i, 1869, 55. = *Steatornithidæ* Sclater and Salvin, Nom. Av. Neotr., 1873, 97; Fuerbringer, Unters. Morph. Syst. Vög., ii, 1888, 1339. = *Heterospondyli* Cope, Am. Nat., xxiii, Oct., 1889, 871, 873. = *Steatornithes* Sharpe, Rev. Rec. At. Classif. Birds, 1891, 79; Hand-list, ii, 1900, 42.

The Steatornithes (Guacharo or Oil Bird) comprise a single family, Steatornithidæ, represented by a single monotypic genus, peculiar to northern South America.



## KEY TO THE FAMILIES OF CAPRIMULGI.

- a.* Hallux relatively very short (about half as long as inner toe), of two phalanges only, directed inward; outer toe (of four phalanges) shorter than inner, both much shorter than middle toe; toes not expanded basally; middle claw with inner edge produced, conspicuously pectinated; tarsus at least twice as long as hallux with claw; maxillary tomium without any angular projection, the rictal portion narrow, not strongly if at all convex; metasternum shallowly 2-notched; no powder-down patches ..... **Caprimulgidæ** (p. 490).
- aa.* Hallux relatively long (as long as inner toe), of three phalanges, directed backward; outer toe (of five phalanges) longer than inner, not much shorter than middle toe; toes unusually broad basally, forming a very broad flattened sole, the width of which is about equal to length of hallux without claw; middle claw not pectinated; tarsus shorter than hallux without claw; maxillary tomium with a conspicuous angular projection or "tooth" about midway between tip of maxilla and rictus, the rictal portion very broad and strongly convex; metasternum deeply 4-notched; powder-down patches present ..... **Nyctibiidæ** (p. 583).

## Family CAPRIMULGIDÆ.

## THE GOATSUCKERS.

- =*Caprimulginae* BONAPARTE, Prodr. Syst. Orn., 1840, 4; Consp. Av., i, 1850, 58.—CABANIS, Wiegmann's Archiv für Naturg., i, 1847, 346.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 387, 388, in text.—COUES, Key N. Am. Birds, 2d ed., 1884, 448.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 382.—SHARPE, Hand-list, ii, 1900, 79.
- >*Caprimulginae* SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1873, 86 (English translation, 1889, 163) (includes *Glareolidæ*!)
- <*Caprimulginae* CABANIS and HEINE, Mus. Hein., iii, 1860, 88 (excludes *Chordeiles*, *Lurocalis*, and *Podager*).—SCLATER, Cat. Am. Birds, 1862, 280 (excludes *Chordeiles*, etc.).
- =*Caprimulgidæ* SHARPE, Rev. Classif. Birds, 1891, 81.—GADOW, in Bronn's Thier-Reich, Vög., ii, 1891, 243, 300.
- <*Chordeilinae* CABANIS and HEINE, Mus. Hein., iii, 1860, 86 (*Chordeiles*+*Lurocalis*+*Podager*).
- <*Chordeilinae* SCLATER, Cat. Am. Birds, 1862, 278 (*Chordeiles*+*Lurocalis*+*Podager*).

Caprimulgi with the toes abnormal (the outer toe much shorter than the middle and consisting of only four phalanges, the hallux very short and consisting of only two phalanges), tarsus at least twice as long as hallux, metasternum shallowly 2-notched, toes not expanded basally, middle claw pectinated, powder-down patches absent and maxillary tomium without any angular projection or "tooth," the rictal portion narrow and not strongly if at all convex.

The Caprimulgidæ are small to medium-sized (rarely rather large) nocturnal or crepuscular Coraciiform birds with small, weak bill, deeply cleft (highly fissirostral) mouth, weak feet, long wings, and protective coloration, their dull colors, in elaborately vermiculated, mottled, freckled or barred pattern, rendering them, when at rest,

exceedingly difficult to distinguish from their immediate surroundings of stony or sandy ground, dry leaves or grass, or branches of trees. None of the species are known to build a nest, the eggs (also, as a rule, protectively colored) being deposited on the ground, or other plain surface.

They are chiefly insectivorous, though some of the larger species are known to swallow, entire, small birds. Many of the species are noted for peculiar cries, the whip-poor-will and chuck-will's-widow of the United States being well-known examples. The name "goat-sucker" is derived from an old-time superstition (perhaps not yet altogether obsolete) that the common European species subsisted by milking goats—a notion which doubtless arose from seeing the birds flying close about the goats at night, or during the twilight, but in reality capturing the flies and other insects which infested the animals.

The family is found nearly throughout warmer portions of the world, and is very numerous in species, about fifty, referable to fourteen genera, occurring in America.

KEY TO THE GENERA OF CAPRIMULGIDÆ.

- a. Palate schizognathous; rictal bristles very large and conspicuous (twice as long as bill or longer); inframandibular region sparsely feathered; <sup>a</sup> lower cervical pteryla without any inner branch or tooth; <sup>a</sup> maxilla without any lateral channel. (*Caprimulginae*.)
- b. Wing normal in both sexes (not more than two primaries equal in length).
- c. Bill very strong, very broad basally, its width at frontal feathering greater than its length from same point, the expanded basal portion with lateral outlines distinctly convex; nasal tubes semi-erect, stalk-like, the small nostril in the extremity and opening upward; legs and feet relatively large and stout. **Siphonorhis** (p. 495).
- cc. Bill weak, not very broad basally, its width at frontal feathering much less than its length from same point, the slightly or moderately widened basal portion with lateral outlines not distinctly if at all convex; nasal tubes shorter, less erect, the larger nostrils opening laterally or anteriorly; legs and feet relatively small and weak.
- d. Feathers of chest not specially developed, but uniform in length, etc., with those of breast.
- e. Tarsus with at least upper third feathered (except behind).
- f. Tail with some of the rectrices more or less conspicuously elongated.
- g. Tail excessively simply forked, the lateral rectrices several times longer than middle pair, the latter shortest.

**Macropsalis** (extralimital).<sup>b</sup>

<sup>a</sup> These characters have been verified only for the genera *Antrostomus*, *Caprimulgus*, *Nyctidromus*, and *Phalænoptilus*, and require confirmation for the other genera. (See Hubert Lyman Clark, Proc. U. S. Nat. Mus., xvii, 1895, 553-557.)

<sup>b</sup> *Macropsalis* SCLATER, Proc. Zool. Soc. Lond., 1866, 143. (Type, *Caprimulgus forcipatus* Nitzsch=*Hydropsalis creagra* Bonaparte.)

Colombia to Venezuela, Peru, Bolivia, and southern Brazil. (Four species.)

- gg. Tail double-forked or double-emarginate, the middle rectrices much longer than second, third, and fourth pairs, sometimes nearly as long as outer pair.....**Hydropsalis** (extralimital).<sup>a</sup>
- ff. Tail without any elongated rectrices.
- g. Longest primaries exceeding distal secondaries by decidedly more than half the length of wing; remiges and rectrices relatively narrower, the former straight terminally; tenth (outermost) primary nearly equal to eighth, sometimes longer.
- Caprimulgus** (extralimital).<sup>b</sup>
- gg. Longest primaries exceeding distal secondaries by decidedly less than half the length of wing; remiges and rectrices relatively broader, the former more or less bowed or incurved terminally; tenth (outermost) primary much shorter than eighth, or else (*Antiurus*) equal to or longer than ninth.
- h. Tenth (outermost) primary equal to or longer than ninth; sides of head black margined above by a buff superciliary stripe.
- Antiurus** (extralimital).<sup>c</sup>
- hh. Tenth (outermost) primary decidedly shorter than ninth, usually shorter than eighth; sides of head not black, and without a buff superciliary stripe.
- i. Tail truncate or emarginate.
- j. Tail distinctly emarginate, in the male nearly as long as wing; sexes conspicuously different in coloration, the male with lateral rectrices mostly (sometimes wholly) white.....**Stenopsis** (p. 497).

<sup>a</sup> *Hydropsalis* Wagler, Isis, 1832, 1222. (Type, *Caprimulgus fuscifer* Vieillot or *C. manurus* Vieillot=*H. fuscifer* or ?)—*Hydropsalia* (emendation) Gray, List Gen. Birds, 1840, 8.—*Hydropsallis* (emendation?) Reichenbach, Av. Sys. Nat., 1850, pl. xc.—*Psaturus* Swainson, Classif. Birds, ii, 1837, 338. (Type, *Caprimulgus torquatus* Gmelin.)—*Diplopsalis* Sclater, Proc. Zool. Soc. Lond., 1866, 141. (Type, *Hydropsalis climacocercus* Tschudi.)—(?) *Tetroura* Lesson, L'Echo du Monde Savant, 10<sup>e</sup> ann., no. 5, July 16, viii, 1843, col. 109. (Type, *Caprimulgus enicurus* Vieillot=unidentified species.)—*Tetrura* (emendation) Lesson, L'Echo du Monde Savant, 11<sup>e</sup> ann., no. 39, May, 1844, 925; Compl. Buff., xx, 1847, 259.

British Guiana to upper Amazon Valley, Bolivia, northern Argentina, Paraguay, and Brazil. (Four species, of which only *H. torquata* and *H. schomburgki* have been examined in this connection.)

<sup>b</sup> *Caprimulgus* Linnæus, Syst. Nat., ed. 10, i, 1758, 193. (Type, as fixed by Gray, 1840, *C. europæus* Linnæus.)—*Nyctichelidon* Rennie, in Montague's Orn. Dict., 1831, 335. (Type, *Caprimulgus europæus* Linnæus.)—*Phalænivora* Blyth, Analyst, v, no. xvii, Oct., 1836, 79; in White's Nat. Hist. Selborne, 1836, 49, 72, footnote. (New name for *Caprimulgus* Linnæus.)

Eastern Hemisphere. (Many species?)

In Sharpe's Hand-list of the Genera and Species of Birds (ii, 1900, 85-88), forty-eight Old World species are referred to the genus *Caprimulgus*. How many of these are really congeneric with *C. europæus*, or whether some of them may not be referable to the American genus *Antrostomus*, has nothing to do with the question of whether the two genera are distinct or not. The characters given above are taken entirely from *C. europæus* and *C. ruficollis*, both of which are unquestionably different in several structural characters from any American species of the family.

<sup>c</sup> *Antiurus* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 98. (Type, *Stenopsis maculicaudus* Lawrence.) (*Ἀντιός*, different; *οὐρά*, tail.)



- jj.* Tail slightly emarginate, always much shorter than wing; sexes not conspicuously different in coloration, the male with lateral rectrices not mostly white.  
*Systellura* (extralimital).<sup>a</sup>
- ii.* Tail more or less rounded.
- j.* Tarsus bare for lower third or more; nostrils roundish, semi-tubular.
- k.* Bill relatively very small; adult male with a white patch on middle portion of primaries. . . . . *Setopagis* (extralimital).<sup>b</sup>
- kk.* Bill relatively much larger; adult males without white patch on primaries. . . . . *Antrostomus* (p. 503).
- jj.* Tarsus feathered to base of toes; nostrils narrow, slit-like, operculate. . . . . *Nyctipolus* (extralimital).<sup>c</sup>
- ee.* Tarsus naked (except extreme upper portion in front).
- f.* Tail nearly as long as wing, strongly rounded; tenth primary much shorter than seventh; primaries with a white or buffy patch in middle portion, not spotted with tawny-buff. . . . . *Nyctidromus* (p. 535).
- ff.* Tail less than two-thirds as long as wing, very slightly rounded; tenth primary nearly as long as seventh; primaries without a white or buffy patch in middle portion but conspicuously spotted or banded with tawny-buff. . . . . *Phalænoptilus* (p. 547).
- dd.* Feathers of chest greatly developed, abruptly much longer than those of breast, forming a conspicuous bib- or apron-like flap.
- c.* Feathers on sides of occiput (supra-auricular region) elongated, more or less pointed, forming more or less conspicuous ear-shaped erectile tufts; tarsus longer than middle toe without claw, naked (except upper portion in front); feathering of chin and throat shorter, less dense.
- f.* Latero-occipital feathers longer and more acuminate, forming more conspicuous "ear-tufts" . . . . . *Otophanes* (p. 553).
- ff.* Latero-occipital feathers shorter, less acuminate. . . . . *Nyctagregus* (p. 556).
- cc.* Feathers on sides of occiput (supra-auricular region) not elongated, but broad, round-tipped, and blended; tarsus shorter than middle toe without claw, apparently feathered for upper half or more;<sup>d</sup> feathering of chin and throat denser, longer. . . . . *Nyctiphrynus* (extralimital).<sup>e</sup>

<sup>a</sup> *Systellura* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 97. (Type, *Stenopsis ruficervix* Sclater.) (Συστέλλω, to abridge; ὄψα, tail.)

<sup>b</sup> *Setopagis* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 98. (Type, *Caprimulgus parvulus* Gould.) (Σής, σήτος, a moth; παρίς, trap.)

<sup>c</sup> *Nyctipolus* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 98. (Type, *Caprimulgus nigrescens* Cabanis.) (Νυκτεπόλος, roaming by night.)

<sup>d</sup> The three specimens examined all have defective feet, and therefore this character can not be stated with certainty.

<sup>e</sup> *Nyctiphrynus* Bonaparte, Rivista Contemporanea, ix, Feb., 1857, 215. (Type, *Caprimulgus ocellatus* Tschudi.)

The first publication of *Nyctiphrynus* dates 1854 (*Conspectus Systematis Ornithologiae*, p. 35), where it is a pure *nomen nudum*. It was next used by Bonaparte in the publication quoted above, a work I was unable to see at the time I proposed the name *Ptilonycterus* (Proc. Biol. Soc. Wash., xxv, May 4, 1912, 98). *Ptilonycterus* must therefore sink as a synonym of *Nyctiphrynus*, with *Caprimulgus ocellatus* Tschudi as type (by subsequent designation of Oberholser, Bull. U. S. National Museum, No. 86, 1914, p. 8, footnote). Gray adopts *Nyctiphrynus* in his "Hand-list" (i, 1869, 59) as a subgenus of *Caprimulgus*, and includes under it only *C. ocellatus* Tschudi.

- bb.* Wing abnormal in both sexes, four (in female) to six (in male) primaries being equal and longest.....**Eleothreptus** (extralimital).<sup>a</sup>
- aa.* Palate desmognathous;<sup>b</sup> rictal bristles minute, scarcely obvious; inframandibular region thickly feathered;<sup>c</sup> lower cervical pterygia with a prominent inner tooth;<sup>c</sup> maxilla with a curved lateral channel. (*Chordeilinae*.)
- b.* Tail more than half as long as wing, simply or doubly emarginate.
- c.* Tenth (outermost) primary equal to or longer than ninth; nostrils large, open, without superior operculum; plumage of forehead shorter, much more flattened; lateral rectrices longest; secondaries 13.
- d.* Primaries relatively narrower terminally; tail simply (usually deeply) emarginate, the middle rectrices shortest.....**Chordeiles** (p. 559).
- dd.* Primaries relatively broader terminally; tail doubly (shallowly) emarginate, the middle rectrices longer than next two pairs.
- Nannochordeiles** (extralimital).<sup>d</sup>
- cc.* Tenth primary shorter than ninth; nostrils small, nearly covered by a broad, tumid operculum; plumage of forehead longer and more full or elevated; lateral rectrices shorter than next pair; secondaries 12?
- Nyctiprogne** (extralimital).<sup>e</sup>
- bb.* Tail not more than half as long as wing, truncate.
- c.* Tarsus shorter than middle toe without claw, the upper portion feathered in front; tenth (outermost) primary longer than eighth; tail less than half as long as wing; rictal bristles not obvious; secondaries 13; no white on under parts of body .....**Lurocalis** (extralimital).<sup>f</sup>
- cc.* Tarsus longer than middle toe without claw, entirely naked; tenth (outermost) primary shorter than seventh; tail half as long as wing; rictal bristles obvious; secondaries 15; under parts of body white.

**Podager** (extralimital).<sup>g</sup>

<sup>a</sup> *Amblypterus* (not of Agassiz, 1833) Gould, Proc. Zool. Soc. Lond., 1837, 105. (Type, *A. anomalus* Gould.)—*Eleothreptus* Gray, List Gen. Birds, 1840, 7. (New name to replace *Amblypterus* Gould, preoccupied.)—*Heleothreptus* (emendation) Selater, Proc. Zool. Soc. Lond., 1866, 143.

Central Brazil to Argentina. (Monotypic.) I have not seen this genus.

<sup>b</sup> At least in *Chordeiles*.

<sup>c</sup> These characters (given by Hubert Lyman Clark for *Chordeiles*, in Proc. U. S. Nat. Mus., xvii, 1895, 553, 557, 558) are assumed to be present in *Nannochordeiles*, *Nyctiprogne*, *Lurocalis*, and *Podager*, the pterylography of which has not been studied.

<sup>d</sup> *Nannochordeiles* Hartert, Ibis, ser. 7, ii, July, 1896, 374. (Type, *Chordeiles pusillus* Gould.) (*Νάνος*, dwarf + *Chordeiles*, χορδή, a harp string; δειλί, evening.—Richmond.) British Guiana to Brazil. (Monotypic.)

<sup>e</sup> *Nyctiprogne* Bonaparte, Consp. Syst. Orn., 1854, 35. (Type, *Caprimulgus leucopygus* Spix.)—*Podochates* Selater, Proc. Zool. Soc. Lond., 1866, 133, 135. (Type, *Caprimulgus leucopygus* Spix.)

British Guiana to southern Brazil. (Monotypic.) In an imperfect specimen of *N. leucopygus*, the only one I have been able to examine, there are apparently only 12 secondaries.

<sup>f</sup> *Lurocalis* Cassin, Proc. Ac. Nat. Sci. Phila., v, 1851, 189. (Type, *Caprimulgus nattereri* Temminck = *C. semitorquatus* Gmelin.)—*Urocolus* (emendation) Cabanis and Heine, Mus. Hein., iii, Sept. 7, 1860, 87, 90. ("Von ούρα (Schwanz) und κόλος (gestutzt, verkürzt)."—Cabanis and Heine.)

Colombia to Cayenne, Peru, and southern Brazil. (Two species.)

<sup>g</sup> *Podager* Wagler, Isis, 1832, 277. (Type, *Caprimulgus diurnus* Maximilian = *C. nacunda* Vieillot.)—*Proïthera* Swainson, Classif. Birds, ii, 1837, 339. (Type, *Caprimulgus diurnus* Maximilian = *C. nacunda* Vieillot.)

South America, east of the Andes. (Monotypic.)

## Genus SIPHONORHIS Sclater.

*Siphonorhis* SCLATER, Proc. Zool. Soc. Lond., 1861, 77. (Type, *Caprimulgus americanus* Linnæus.)

Medium-sized Caprimulginae (length about 225 mm.) with the very strong bill broader than long at frontal feathering, the expanded portion distinctly convex in vertical profile; nostrils roundish, in the apex of a stalklike tube; tenth (outermost) primary much shorter than sixth; tail nearly as long as wing, strongly rounded, the rectrices relatively rather narrow and only slightly if at all increasing in width terminally; primaries spotted with dull tawny-buff, without white patch.

Bill very broad and strong basally, its width at frontal feathering greater than its length from same point, the expanded portion with distinctly convex outlines, the short tip abruptly and greatly contracted, in vertical profile; culmen very strongly decurved, distinctly ridged (except terminally). Nostril circular, in end of a distinct, obliquely vertical, stalklike tube. Rictal bristles long (about twice as long as bill), but not very strong. Wing moderate, rounded, the eighth primary longest, seventh and ninth slightly shorter and equal, the tenth (outermost) slightly longer than fifth. Tail nearly as long as wing (more than six-sevenths as long), distinctly rounded (the lateral rectrices about six-sevenths as long as middle pair), the rectrices relatively rather narrow, neither narrowing nor widening terminally. Tarsus slightly longer than middle toe with claw, nearly one-fifth as long as wing, stout, entirely naked (except extreme upper portion in front); outer toe, without claw, reaching to about middle of penultimate phalanx of middle toe, very slightly longer than inner toe; hallux, with claw, slightly longer than basal phalanx of middle toe; claws all unusually short and thick.

*Plumage and coloration.*—Feathers of pileum rather narrow terminally, especially on center of crown, those on sides of occiput not elongated; feathers of chest normal (not developed into an erectile flap or apron). Primaries spotted with dull tawny-buff or clay color, but without white patch; rectrices (except middle pair) tipped with white; a white band across lower throat.

*Range.*—Island of Jamaica. (Monotypic.)

## SIPHONORHIS AMERICANA (Linnæus).

## JAMAICAN GOATSUCKER.

*Adult male.*—Pileum mixed brown and pale brownish gray, finely vermiculated with darker, and streaked with black, the streaks broader on median portion; hindneck similar but more narrowly streaked, the lower portion dull tawny, forming an indistinct collar; back, rump, and upper tail-coverts light brown, vermiculated or freckled with



dusky and streaked with black; scapulars for the greater part pale buffy gray, finely freckled or vermiculated with dusky, relieved by large irregular and variously-shaped spots of black, these margined, in part, with buffy white and pale ochraceous-buff, some of the feathers with inner web, or portions of outer web, bright mars brown, minutely vermiculated with dusky; wing-coverts brown, vermiculated with dusky and streaked or otherwise marked with black, many of the feathers with terminal or subterminal roundish spots, on one or both webs, of buffy or buffy whitish; inner secondaries ("tertials") very pale buffy grayish, or buffy grayish brown, minutely freckled and vermiculated with darker, and with a subterminal spot or streak of black; other secondaries brownish black with large irregular broken spots of light cinnamon-rufous on both webs; primaries and primary coverts brownish black with large spots of light cinnamon-rufous or dull ochraceous-buff, the terminal portion of their inner webs mostly dull grayish brown; middle pair of rectrices light grayish brown irregularly vermiculated and freckled with dusky and with occasional, more or less distinct, blackish spots; next pair similar but more coarsely vermiculated, and with about nine more or less distinct (mostly imperfect) blackish bars, the last of which is very distinct and precedes a buffy white terminal area about 8 mm. in extent; remaining rectrices similar but with the white tip and blackish subterminal band somewhat broader and other black bars more distinct, especially on outer web; loreal, auricular, and malar regions deep chestnut-brown, very narrowly and indistinctly barred with dusky, the lower anterior portion of the malar region spotted with buffy white; chin plain cinnamon-buff or pale buffy brown; throat much like auricular region, etc., but more coarsely barred; white spots of lower anterior portion of malar region continued downward and backward, forming two converging, more or less broken, lines, which meet at middle of anterior edge of a conspicuous buffy white band across lower throat or foreneck; chest tawny-brown or russet irregularly and narrowly barred or vermiculated with dusky; breast light tawny-brown or brownish buff, narrowly barred with dusky, many of the feathers with a very large roundish terminal spot of buffy white or dull white; rest of under parts light dull ochraceous-buff or brownish buff, narrowly and rather distantly barred with dusky, the feathers of sides with large terminal spots of dull white, like those of breast; under wing-coverts ochraceous-buff, irregularly barred with dusky; inner webs of primaries dusky, with narrow transverse broken spots, or bars, of pale dull cinnamon-rufous or cinnamon-buff; bill brown, darker at tip; legs and feet brown, the toes darker terminally; length (skin), 230; wing, 131.5; tail, 123; exposed culmen, 11.5; tarsus, 23; middle toe, 20.<sup>a</sup>

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<sup>a</sup> One specimen.

*Adult female*.—Similar to the adult male but whitish tips to rectrices much narrower (the widest less than 5 mm.) and dull pale buff or pale brownish buff, instead of buffly white; length (skin), 240; wing, 138; tail, 128; exposed culmen, 15.<sup>a</sup>

Island of Jamaica. (Extinct?)

[*Caprimulgus*] *americanus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 193 ("America calidiore;" based on *Small wood owl* Sloane, Voy. Jamaica, ii, 296); ed. 12, i, 1766, 346.—GMELIN, Syst. Nat. i, pt. ii, 1789, 1032.—LATHAM, Index Orn., ii, 1790, 587 (Jamaica; "Guiana").—GRAY, Hand-list, i, 1869, 60, no. 683.

*Caprimulgus americanus* VIELLOT, Nouv. Dict. d'Hist. Nat., x, 1817, 239.

[*Chordeiles*] *americanus* BONAPARTE, Consp. Av. i, 1850, 63.

*Siphonorhis americanus* SCLATER, Proc. Zool. Soc. Lond., 1861, 77 (figs. of head and foot; crit.); Cat. Am. B., 1862, 282; Journ. für Orn., 1867, 277; Revised List Birds Jam., 1910, 10.—ALBRECHT, Journ. für Orn., 1862, 199.—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 286.—CORY, Auk, iii, 1886, 344; Birds West Ind., 1889, 139; Cat. West Ind. Birds, 1892, 105, 130.—HARTERT, Cat. B. Brit. Mus., xvi, 1892, 592 (Trelawny and Westmoreland, Jamaica).—SCOTT, Auk, ix, 1892, 276.

*S[siphonorhis] americanus* NEWTON (A. and E.), Handb. Jamaica, 1881, 109.—HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 33.

[*Siphonorhis*] *americanus* SHARPE, Hand-list, ii, 1900, 83.

*Siphonorhis americana* SCLATER, Proc. Zool. Soc. Lond., 1866, 144 (monogr.); Journ. für Orn., 1867, 277.—CORY, List Birds West Ind., 1885, 16.

*Liphonorhis* [err. typ.] *americana* CORY, Cat. West Ind. Birds, 1892, 12.

[*Siphonorhis*] *americana* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 97.

### Genus STENOPSIS Cassin.

*Stenopsis* CASSIN, Proc. Acad. Nat. Sci. Phila., 1851, 179. (Type, *Caprimulgus cayennensis* Gmelin.)

Medium-sized Caprimulginae (length about 195–250 mm.) with tail shorter than wing, truncate or emarginate; bill rather narrow and long; rictal bristles twice as long as bill; tarsus longer than middle toe without claw, feathered for at least upper half (except behind), and tenth primary nearly as long as eighth.

Bill rather narrowly triangular in vertical profile, its length from frontal feathering much greater than its width at same point. Nostril about midway between frontal feathering and tip of maxilla (or rather nearer the former), roundish, opening in anterior end of sub-tubular or inflated nasal fossa. Rictal bristles long and strong, twice as long as bill or longer. Wing long and pointed, the longest primaries exceeding distal secondaries by nearly to more than half the length of wing; ninth or eighth and ninth primary longest, the tenth shorter than eighth but very much longer than seventh. Tail less than three-fourths to five-sixths as long as wing, truncate or slightly emarginate. Tarsus longer than middle toe without claw, feathered

<sup>a</sup> One specimen. (Feet defective.)

for at least upper half (except behind); outer toe (without claw) not reaching quite to penultimate articulation of middle toe, as long as or very slightly longer than inner toe; hallux, with claw, shorter than basal phalanx of middle toe.

*Plumage and coloration.*—Feathers of pileum broad, blended (except on middle of crown, where rather distinctly outlined); those on sides of occiput not elongated; feathers of chest not unusually developed. A white patch on middle of primaries (this buffy in females); rectrices (except two middle pairs) extensively white terminally, at least the inner web, sometimes with inner web mostly white; throat white, or with a white band across lower portion.

*Range.*—Costa Rica to Chile, Argentina, southeastern Brazil, and Cayenne. (Monotypic?.)

KEY TO THE SUBSPECIES OF *STENOOPSIS CAYENNENSIS*.

a. Lateral rectrices mostly (sometimes wholly) white: primaries crossed by a median oblique band of white. (*Adult males*.)

b. Coloration darker, the chest and breast much more heavily and extensively barred. (Guianas; Tobago; Trinidad?)

*Stenopsis cayennensis cayennensis*, adult male (extralimital).<sup>a</sup>

bb. Coloration paler, the chest and breast much less heavily and extensively barred.

c. Under parts mostly white, often pure white, the under tail-coverts usually more or less buffy; only the chest barred with dusky and strongly suffused with buff; general tone of coloration of upper parts lighter and grayer. (Islands of Curaçao and Margarita; coast of Venezuela?)

*Stenopsis cayennensis insularis*, adult male (p. 499).

cc. Under parts distinctly buff, approaching white only on parts of throat; chest and breast barred with dusky and suffused with light buffy brown or cinnamon; general tone of coloration of upper parts darker and browner. (Panama to Costa Rica). *Stenopsis cayennensis albicauda*, adult male (p. 502).

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<sup>a</sup> [*Caprimulgus*] *cayennensis* Gmelin, Syst. Nat., i, pt. ii, 1789, 1031 (based on *Engoulevent de Cayenne* Buffon, Ois., vi, 545; *Crapaud-volant de Cayenne* Buffon, Pl. Enl., pl. 760; *White-necked Goatsucker* Latham, Synopsis, ii, pt. 2, 599).—*Stenopsis cayennensis* Cassin, Proc. Ac. Nat. Sci. Phila., v, 1851, 179; Hartert, Cat. Birds Brit. Mus., xvi, 1892, 583, part.—[*Caprimulgus*] *cayanus* Latham, Index Orn., ii, 1790, 587 (= *C. cayennensis* Gmelin).—*Caprimulgus cayanensis* Temminck, Cat. Syst., 1807, 137.—[*Antrostomus cayanensis* Bonaparte, Consp. Av., i, 1850, 61.—*Stenopsis cayanensis* Schater, Proc. Zool. Soc. Lond., 1866, 140 (monogr.).—(?) *Caprimulgus leopetes* Jardine and Selby, Illustr. Orn., ser. 1, vol. ii, pt. 6, Aug., 1830, pl. 87 [p. 75] (Tobago; coll. Sir W. Jardine).—(?) *Caprimulgus odonpteron* Lesson, Rev. Zool., ii, April, 1839, 105 ("insulæ Antillarum").—(?) [*Antrostomus*] *odonpteron* Bonaparte, Consp. Av., i, 1850, 61.—(?) *Stenopsis tobagensis* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 195 (Tobago; coll. U. S. Nat. Mus.).

I am now doubtful whether the Tobago bird can be separated from that of the Guianas, a larger series of specimens being required to settle the question; and I have not seen an example from Trinidad. An adult male from Roraima, British Guiana, is so much darker than other specimens from the Guianas and has so much more black on outer rectrices, besides being larger, that it is possible it may represent a different subspecies.



aa. Lateral rectrices without any white; primaries crossed by a median oblique, interrupted, band of ochraceous-buff. (*Adult females.*) <sup>a</sup>

**STENOPSIS CAYENNENSIS INSULARIS** Richmond.

**ISLAND STENOPSIS.**

Very much paler than *S. c. cayennensis*,<sup>b</sup> with much less of dark coloring on under parts.

*Adult male.*—Pileum pale gray, suffused with pale buffy brown (especially on center of crown), minutely vermiculated with deeper grayish brown, and sharply streaked, except on lateral portions, with black, these streaks sometimes edged or margined with ochraceous-buff; a broad, unbroken, very conspicuous collar of ochraceous-buff across hindneck; back and rump pale gray, suffused with pale buffy brown indistinctly vermiculated with darker and with a few narrow irregular streaks of blackish, the upper tail-coverts similar but paler and clearer gray, with more distinct vermiculations, the mesial black streaks with more of a tendency to form a chain of connected irregular spots; scapulars, in part, similar in coloration to back, but many of the feathers with outer web mostly plain buff and with a large sub-terminal, irregularly hastate spot or broad streak of black; wing-coverts, in part, colored like back and scapulars but most of them with a large ovoid spot of buff, or ochraceous-buff, on distal portion of outer web; inner secondaries ("tertials") pale brownish gray and buffy, irregularly vermiculated with darker and with an irregular mesial streak of black; remaining secondaries dark sooty grayish brown, rather broadly tipped with ochraceous-buff passing into white terminally (the tips sometimes wholly white on distal secondaries), their outer webs edged, in part, with pale buffy brown or dull ochraceous-buff, or sometimes with two transverse series of broken buffy spots on edge of outer web, their inner webs with a very large transverse spot of white entirely across middle portion; primaries dull grayish black passing into hoary gray distally, the four outermost entirely crossed, obliquely, by a broad band of white, this on middle

<sup>a</sup> I am unable to give characters by which females of the several forms may be distinguished, the series of specimens being rather meager. Two females from Roraima, British Guiana, are much darker than one from Aunai, in the same country, have the whole of the under parts, posterior to the chest, heavily barred, including the under tail-coverts, and the ochraceous-buff or tawny-ochraceous band across middle of primaries nearly obsolete, the outer webs of the primaries being mostly plain dusky (entirely so in one specimen); but one specimen from an unknown locality in British Guiana (possibly from Roraima, however) is precisely similar. Females of *S. c. insularis* (including those from the coast of Venezuela) and of *S. c. albicauda*, also one from Barranquilla, Colombia, are lighter and more buffy in their general tone of coloration, and, besides having a well-defined band of ochraceous-buff across primaries, have the outer webs of the primaries, especially the proximal ones, conspicuously spotted with the same.

<sup>b</sup> See p. 498.

portion of outermost quill but crossing the fourth opposite tip of the fifth; middle pair of rectrices pale gray irregularly mottled and vermiculated with darker gray and dusky and with irregular transverse broken spots along shaft, these sometimes developed into indistinct bars or "herringbone" pattern; second pair with inner web white broadly tipped with dull brownish black, sometimes crossed by a narrow band of the same anterior to middle portion, the outer web mostly plain brownish black, except toward shaft; third pair white broadly tipped with dark sooty brown or dull brownish black, the outer web broadly edged with the same, except basally, this also sometimes crossed (on both webs) by a band of black anterior to the middle; fourth pair similar but less broadly tipped with blackish; fifth (outer) pair white with a more or less broad (sometimes nearly obsolete) oblique or A-shaped band of black across middle portion; sides of forehead and thence backward to above eyes dull white, forming a distinct supraloral stripe; lores and orbital region dull light ochraceous-buff, narrowly and indistinctly barred or vermiculated with dusky; auricular region dull pale buffy, narrowly and indistinctly streaked with darker; posterior portion of malar region ochraceous-buff with triangular or V-shaped spots of black; anterior portion of malar region, chin, and throat, immaculate white, passing into pale buff on foreneck, where some of the feathers are narrowly tipped with blackish; chest and breast buff, the former irregularly and narrowly barred with blackish, many of the feathers mostly pale buff or buffy white; sides, flanks, and abdomen immaculate white, passing into pale buff on under tail-coverts; axillars and innermost under wing-coverts immaculate white, the other coverts spotted with ochraceous-buff and grayish dusky; bill dark brownish, blackish terminally; legs and feet deep brownish (in dried skins); length (skins), 205-220 (212); wing, 132-137.5 (134.5); tail, 102-124 (113.8); exposed culmen, 12-14 (12.8); tarsus, 14.5-15 (14.8); middle toe, 15-15.5 (15.2).<sup>a</sup>

*Adult female*.—Very different in coloration from the adult male. Upper parts much as in adult male, but general color darker, with the vermiculations coarser, black markings rather larger, buff markings deeper, and collar across hindneck tawny instead of ochraceous-buff, as well as less distinctly defined; band across middle portion of primaries ochraceous-buff instead of white, much narrower, interrupted at shafts, the inner primaries spotted with ochraceous-buff and the outer ones with a subbasal series of ochraceous-buff spots; four outer rectrices (on each side) broadly barred or banded, on both webs, with dark sooty brown or brownish black and light brownish gray mixed with ochraceous-buff and coarsely vermiculated or marbled with dusky; under parts deep buff, immaculate on abdomen, nearly so on chin and throat, elsewhere barred or transversely spotted with

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<sup>a</sup> Three specimens.

brownish black, some of the feathers of the breast with exposed portion almost wholly pale buff or buffy white; length (skins), 187-205 (198); wing, 131-138 (134); tail, 102-105.5 (104.2); exposed culmen, 13.5-14.5 (13.8); tarsus, 15-16 (15.4); middle toe, 14.5-15 (14.8).<sup>a</sup>

Islands of Curaçao and Bonaire, Dutch West Indies; Margarita Island, Venezuela?; coast of Venezuela (Maripa, Rio Caura; Encontrados)?.

*Stenopsis cayennensis*? (not *Caprimulgus cayennensis* Gmelin) BERLEPSCH, Journ. für Orn., 1892, 87 (Curaçao).

*Stenopsis cayennensis* HARTERT, Ibis, 1893, 319 (Curaçao; crit.; habits), 328 (Bonaire); Novit. Zool., ix, 1902, 303 (Bonaire; Curaçao).—CLARK (A. H.), Auk, xix, 1902, 263 (Margarita I.).—CORY, Pub. 137, Field Mus. N. H., 1909, 245 (Margarita I.).

*S[tenopsis] cayennensis* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 35, part.

[*Stenopsis*] *cayennensis* SHARPE, Hand-list, ii, 1900, 83, part (Curaçao; Venezuela?).

(?) *Stenopsis cayennensis* BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 89 (Altagracia and Quiribana de Caicara, Venezuela; crit.).

<sup>a</sup> Three specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Four adult males from the Guianas (except Roraima) ( <i>S. c. cayennensis</i> ?).....	137	111.6	13	14.5	13.5
One adult male from Roraima, British Guiana ( <i>S. c. cayennensis</i> ).....	150	129	14	-----	-----
Two adult males from Tobago ( <i>S. c. "leopetes"</i> ).....	140.5	115.7	12.7	15.5	15.2
Two adult males from Curaçao ( <i>S. c. insularis</i> ).....	134.7	119.7	13	15	15
One adult male from Margarita Island ( <i>S. c. insularis</i> ).....	134	102	12.5	14.5	15.5
One adult male from Rio Caura, Venezuela ( <i>S. c. insularis</i> ?).....	143	122	12	15	14
One adult male from Panama (near Panama City) ( <i>S. c. albicauda</i> ?).....	144	120	12	16.5	16
One adult male from Talamanca, Costa Rica (type of <i>S. c. albicauda</i> ).....	138	116.5	12	15.5	15
FEMALES.					
One adult female from Annai, British Guiana ( <i>S. c. cayennensis</i> ).....	136	102	10.5	16	15.5
Three adult females from Roraima, British Guiana ( <i>S. c. cayennensis</i> ?).....	142.7	107	13.8	16.2	15.5
One adult female from Tobago ( <i>S. c. "leopetes"</i> ).....	141	99.5	12.5	15	15
Two adult females from Curaçao ( <i>S. c. insularis</i> ).....	132	103.7	13.5	15.2	15
One adult female from Margarita Island ( <i>S. c. insularis</i> ).....	138	105	14.5	16	14.5
Three adult females from Venezuela ( <i>S. c. insularis</i> ?).....	136.2	99.7	12.5	15.5	14.7
One adult female from Barranquilla, Colombia ( <i>S. c. albicauda</i> ?).....	133	104	13.5	15.5	15.5
One adult female from Nata, Cocle, Panama ( <i>S. c. albicauda</i> ?).....	138.5	108.5	13	16	15.5
One adult female from Miravalles, Costa Rica ( <i>S. c. albicauda</i> ?)..	142	107	12	16	15.5

The adult male from Rio Caura, Venezuela, agrees with typical *S. c. insularis* in pure whiteness of the under parts, but is slightly deeper grayish above. That from Margarita Island is in bad condition, but seems to agree in coloration with Curaçao examples.



*Stenopsis cayennensis* LOWE, Ibis, 1907, 588 (Margarita I.).

*Stenopsis cayennensis insularis* RICHMOND, Proc. Biol. Soc. Wash., xv, June 25, 1902, 159 (Curaçao; coll. U. S. Nat. Mus.).

*S[tenopsis] insularis* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 195, in text.

### STENOPSIS CAYENNENSIS ALBICAUDA (Lawrence).

#### WHITE-TAILED STENOPSIS.

Differing from *S. c. insularis* in the much darker coloration of the adult male, which has the middle rectrices more distinctly barred, the crown much more broadly streaked, and the scapulars more heavily spotted with black, and the general color of the under parts deep buff instead of nearly pure white. Differs from *S. c. cayennensis* in strongly buffy and much less heavily barred under parts.<sup>a</sup> Adult female apparently not with certainty distinguishable from that of other forms.

*Adult male*.—Length (skins), 210–220 (215); wing, 138–144 (141); tail, 116.5–120 (118.2); exposed culmen, 12; tarsus, 15.5–16.5 (16); middle toe, 15–16 (15.5)<sup>b</sup>

*Adult female*.—Length (skins), 202–205 (203.5); wing, 138.5–142 (140.2); tail, 107–108.5 (107.2); exposed culmen, 12–13 (12.5); tarsus, 16; middle toe, 15.5.<sup>c</sup>

Costa Rica (Talamanca; Rio Frio; Jiménez; Azahár de Cartago; Miravalles; Bebedero; Pozo Azul de Pirris) and Panamá (Calovévora, Veragua; Natá, Coclé; Sabana de Panamá). Northern Colombia (Barranquilla) ?

*Stenopsis albicauda* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., xi, nos. 3–4, Feb., 1875, 89 (Talamanca, e. Costa Rica; coll. U. S. Nat. Mus.).—ZELÉDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 503 (Miravalles, n. w. Costa Rica; crit.; descr. female).

*Stenopsis albicauda?* RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 515 (Rio Frio, Costa Rica (seen but not collected).

*Stenopsis cayennensis* (not *Caprimulgus cayennensis* Gmelin) SALVIN, Proc. Zool. Soc. Lond., 1870, 204 (Calovevora, Veragua; crit.).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 583, part.—SALVIN and GODMAN, Biol. Centr.-Am. Aves, ii, 1894, 392, part (Talamanca, Costa Rica; Calovevora, Panama).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1906, 216 (Sabana de Panama).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 502 (Jimenez, Bebedero, La Candelaria, Pozo Azul de Pirris, and Azahar de Cartago, Costa Rica; crit.).

*S[tenopsis] cayennensis* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 35, part.

[*Stenopsis*] *cayennensis* SHARPE, Hand-list, ii, 1900, 83, part (Costa Rica; Panama).

<sup>a</sup> If I am right in referring an adult male from Panama (near City of Panama) to *S. c. albicauda*, the lateral rectrices of this form are sometimes crossed by an oblique band of dusky, as in *S. c. cayennensis* and other subspecies. In the type, however, there is no trace of this band on any of the three outer rectrices.

<sup>b</sup> Two specimens (one each from Porto Rica and Panama.)

<sup>c</sup> Two specimens (one each from Costa Rica and Panama).

## Genus ANTROSTOMUS Bonaparte.

*Antrostomus* BONAPARTE, Geog. and Comp. List, 1838, 8.<sup>a</sup> (Type, as fixed by Gray, 1840, *Caprimulgus carolinensis* Gmelin.)

Medium sized to rather large Caprimulginae (length about 230–380 mm.) with tarsus slightly shorter to slightly longer than middle toe without claw, the upper two-thirds to three-fourths feathered (except behind); longest primaries exceeding distal secondaries by not more than half the length of wing, the tenth (outermost) much shorter than eighth; tail two-thirds to three-fourths as long as wing, more or less distinctly rounded; culmen not arched, the mesorhinium not depressed; nostrils not distinctly tubular (or the tube very short), in anterior end of nasal fossæ; primaries spotted with ochraceous-buff or tawny, without white spot on either web.

Bill moderately broad basally, its length from frontal feathering equal to not more than one and a half times its width at same point; culmen not arched but gradually decurved from base, the mesorhinium not depressed. Nostril not distinctly tubular (or else the tube very short), in anterior end of nasal fossa, opening antero-laterally. Rictal bristles conspicuous, reaching to or beyond tip of bill. Wing moderate, the longest primaries exceeding distal secondaries by not more (usually less) than half the length of wing; eighth and ninth primaries usually equal and longest (ninth longest in *A. carolinensis* only), the tenth (outermost) much shorter than eighth (equal to or slightly shorter than seventh, except in *A. carolinensis*, in which the difference between tenth and eighth is much less than between tenth and seventh); seventh, eighth, and ninth primaries with outer web distinctly sinuated, except in *A. carolinensis* (in which only the eighth and ninth are sinuated). Tail two-thirds to three-fourths as long as wing, distinctly to rather strongly rounded, the rectrices rather broad and appreciably widening distally (except in *A. goldmani* and *A. ridgwayi*). Tarsus slightly shorter to slightly longer than middle toe without claw, feathered for about upper two-thirds to three-fourths, except behind; hallux, with claw, slightly to much longer than basal phalanx of middle toe.

*Plumage and coloration.*—No special development of plumage of head nor chest. Primaries spotted (usually on both webs) with ochraceous-buff or tawny, but without any white spot on either web; tail with white (males) or buff (females) on distal portion of three outer pairs of rectrices, at least on inner web; pileum streaked or longitudinally blotched with black, at least medially; a band of white or buffy across lower throat (except in *A. saturatus*).

*Range.*—Eastern temperate North America to Mexico and southward to Peru, Brazil, and the Guianas. (About fourteen species.)

<sup>a</sup> See Stone, Auk, xxiv, 1907, 196, and Allen, Bull. Am. Mus. N. H., xxiv, 1908, 32.

Several species generally referred to this genus (or to *Caprimulgus* by those who do not recognize *Antrostomus* as distinct) I have not been able to examine. These are: *A. maculicaudus* (Lawrence), *A. parvulus* (Gould), *A. whitelyi* Salvin, and *A. sericeocaudatus* Cassin. An examination of these might necessitate some modification of the generic diagnosis, or, on the other hand, the elimination of one or more of the species mentioned from the genus.<sup>a</sup>

Notwithstanding the several pronounced structural differences between the type of *Antrostomus* and all the other species here referred to that genus, I am not able to subdivide the genus satisfactorily. *A. carolinensis* differs from all the rest in the pinnate rictal bristles, wing-formula (the ninth primary being distinctly longer than the eighth instead of the same length, the tenth very much longer than the seventh instead of being the same length or slightly shorter), in having the outer web of only the eighth and ninth (instead of seventh, eighth, and ninth) primaries sinuated, in having the hallux (with claw) much longer than the basal phalanx of the middle toe, and possibly in other characters.<sup>b</sup> *A. rufus* (Boddaert) is, however, so exact a reproduction of *A. carolinensis* in coloration and large size that, notwithstanding the absence of pinnæ to the rictal bristles, its different wing-formula, etc., it would seem unreasonable to separate the two generically. In fact, *A. rufus* has the feet more as in *A. carolinensis*, the anterior toes being even relatively shorter and stouter, instead of the reverse as seen in other species.

KEY TO THE SPECIES AND SUBSPECIES OF ANTROSTOMUS.

- a. Rictal bristles with distinct lateral filaments; wing 201.5–225 mm. (Southeastern United States, south in winter to Greater Antilles, Panama, and Colombia.)

*Antrostomus carolinensis* (p. 506).

- aa. Rictal bristles without lateral filaments; wing less (usually much less) than 200 mm.

- b. General color strongly rufescent brown, the wing 177–194 mm.; adult males with terminal half of inner web of lateral rectrices ochraceous or tawny on under surface, white margined with ochraceous or tawny on upper surface; adult females with lateral rectrices tawny at tip. (*Antrostomus rufus*.)

<sup>a</sup> Of the American species listed under *Caprimulgus* in Sharpe's "Hand-list" (ii, 1900, 84, 85), *C. rosenbergi* Hartert, said to be nearly related to "*Caprimulgus*" *ocellatus* Tschudi, is probably a *Nyctiphrynus* (see p. 493); *C. yucatanicus* Hartert is the type of the genus *Nyctagreuus* Nelson, very closely related to *Otophanes* Brewster and possibly not distinct generically from that remarkable form.

<sup>b</sup> According to Hubert Lyman Clark, in Auk, xviii, 1901, 169, 171, *A. carolinensis* differs from all other North American Caprimulgidae in possessing 14 secondaries; but I am able to find only 12, the same number as in *A. vociferus* and others. The same authority gives the wing-formula of *A. carolinensis* as 8, 7, 9, 6, 5, 4, 3, 10, 2, 1, which is impossible, for no member of the Caprimulgidae, so far as I am aware, has the tenth primary shorter than the third. A perfect specimen now before me has the wing-formula as follows: 9, 8, 10, 7, 6, 5, 4, 3, 2, 1.



- c. Smaller, with relatively smaller bill (adult male <sup>a</sup> averaging: Wing 177.7, tail 116.9, exposed culmen 15); coloration averaging lighter and more rufescent. (Panama to southern Brazil.).....***Antrostomus rufus rufus*** (p. 510).
- cc. Larger, with relatively larger bill (adult female averaging: Wing 188.5, tail 124.2, exposed culmen 18.2); coloration averaging darker and less rufescent. (Island of Santa Lucia, Lesser Antilles.)...***Antrostomus rufus otiosus*** (p. 513).
- bb. General color grayish brown (or if rufescent the wing less than 170 mm.); adult males with terminal portion of both webs of lateral rectrices white, but this usually occupying much less than terminal half of inner web; adult females with lateral rectrices abruptly tipped with buff.
- e. A distinct white, buffy, or ochraceous band across lower throat or foreneck; inner webs of primaries with more or less distinct spots of ochraceous-buff or tawny, at least on inner (proximal) quills.
- d. Lower hindneck wholly "grizzled" brownish gray, without trace of buffy, ochraceous, or tawny spots, bars, or collar; larger (wing averaging 181.8 in male, 176 in female). (Cuba.).....***Antrostomus cubanensis*** (p. 513).
- dd. Lower hindneck more or less spotted or barred with buff, ochraceous, or tawny, or with a conspicuous collar of same; smaller (wing averaging less than 180 in adult males, less than 170 in adult females).
- e. Collar across lower hindneck more or less broken, sometimes very indistinct.
- f. Collar across lower hindneck very indistinct, merely indicated by small spots or bars of buffy or ochraceous; white tip to lateral rectrices much larger on inner web than on outer, <sup>b</sup> 29 mm. or more in length; smaller (wing averaging 167 or less in adult male, less than 163 in adult female).
- g. Spots on pileum much larger; chest vermiculated rather than spotted. (*Antrostomus vociferus*.)
- h. General coloration paler; spots on inner webs of primaries more distinct, always (?) evident on outermost quill.
- i. Smaller (averaging: Wing 152.4 in male, 155.3 in female; tail 123 in male, 116 in female); sides of head usually darker, with post-auricular area paler buffy and more restricted; rictal bristles averaging smaller. (Eastern United States and southeastern Canada, south in winter to British Honduras, Salvador, etc.)  
***Antrostomus vociferus vociferus*** (p. 515).
- ii. Larger (averaging: Wing 166.3 in male, 162.1 in female; tail 124.4 in male, 121.3 in female); sides of head averaging more buffy or ochraceous, with postocular area deeper buffy or ochraceous, and larger; rictal bristles averaging decidedly larger. (Southern Arizona to southwestern Texas and southward through central and western Mexico.)  
***Antrostomus vociferus macromystax*** (p. 520).
- hh. General coloration darker; spots on inner webs of primaries less distinct, the whole inner web of outermost quills sometimes wholly uniform dusky; under parts more heavily barred and spotted. (Size of *A. v. macromystax*.) (State of Chiapas, southern Mexico; Guatemala.).....***Antrostomus vociferus chiapensis*** (p. 522).
- gg. Spots on pileum much smaller; chest spotted rather than vermiculated. (Size of *A. vociferus macromystax*.) (State of Oaxaca, southwestern Mexico.).....***Antrostomus oaxacæ*** (p. 523). <sup>c</sup>

<sup>a</sup> No adult males of *A. rufus rufus* are available for measurement.

<sup>b</sup> Except, possibly, in *A. oaxacæ*, of which the adult male is unknown.

<sup>c</sup> This form, of which only a single adult female is known, may also be a subspecies of *A. vociferus*.

- ff.* Collar across lower hindneck distinct, consisting of large, mostly triangular or sagittate spots of dull tawny-ochraceous; white tip to lateral rectrices much larger on outer than on inner web, less than 29 mm. long (measured along shaft), its anterior outline crossing very obliquely; larger (wing averaging 172.6 in male, 169.3 in female). (States of Nuevo Leon, Tamaulipas, and Vera Cruz, eastern Mexico.)  
***Antrostomus salvini* (p. 525).**
- ee.* Collar across lower hindneck unbroken, very conspicuous.
- f.* Collar tawny or tawny-ochraceous; pileum, scapulars, etc., much more heavily spotted or blotched with black, the general coloration of upper parts much less uniform, less grayish; inner webs of primaries with narrow, irregular or broken bars of light cinnamon-rufous; adult males <sup>a</sup> with both webs of lateral rectrices wholly white or white and brownish buff distally, this whitish area about 55 mm. long on outermost rectrix.
- g.* General tone of coloration much grayer; band across lower throat buffy white. (Yucatan.).....***Antrostomus nelsoni* (p. 527).**
- gg.* General tone of coloration much more rufescent; band across lower throat buff, and narrower. (British Honduras.)  
***Antrostomus badius* (p. 529).**
- ff.* Collar buff to ochraceous-buff; pileum, scapulars, etc., much less heavily spotted (mostly narrowly streaked) with black, the general coloration of upper parts much more uniform and more grayish; inner webs of primaries with large, irregularly ovoid or elliptical unbroken spots of ochraceous-buff; adult males <sup>b</sup> with white terminal area of lateral rectrices mostly confined to inner web, and less than 40 mm. long.
- g.* Smaller (wing of adult female 155, tail 116, tarsus 15, middle toe 16.5); coloration darker. (Southwestern Mexico, in States of Guerrero and southern Sinaloa.).....***Antrostomus ridgwayi* (p. 531).**
- gg.* Larger (wing of adult female 162, tail 121, tarsus 17, middle toe 18.5); coloration paler. (Western Mexico, in State of Sinaloa.)  
***Antrostomus goldmani* (p. 532).**
- cc.* No distinct, if any, white, buffy, or ochraceous band across lower throat; inner webs of primaries wholly uniform blackish. (Highlands of Costa Rica and western Panama.).....***Antrostomus saturatus* (p. 534).**

### ANTROSTOMUS CAROLINENSIS (Gmelin).

#### CHUCK-WILL'S-WIDOW.

Rictal bristles with lateral filaments. (The only species of the genus so characterized.)

*Adult male.*—General color of upper parts brown (between mummy and bistre), more grayish on posterior scapulars and tertials, everywhere minutely vermiculated and sprinkled with black (the vermicu-

<sup>a</sup> Except, possibly, in *A. badius*, the male of which is unknown. The female, however, is so much like *A. nelsoni* in size and pattern of coloration (except, of course, the lateral rectrices) that I suspect it may prove to be the same species, in which event *A. badius*, being the older name, should be used.

<sup>b</sup> Except, possibly, *A. goldmani*, of which only the female is known; but as this is evidently very closely related, probably only subspecifically distinct (possibly not even that) from *A. ridgwayi*, there is little doubt that the tail markings are practically the same.

lations coarser on scapulars, wing-coverts, and middle rectrices); pileum broadly streaked with black, the streaks much broader along median line, obsolete or nearly so on extreme lateral portions; scapulars with irregular large spots or blotches of black, these usually irregularly margined, in part at least, by buff (more or less deep); middle rectrices with a median series of very irregular broken spots of black, which often show a tendency toward forming broken bars which become less distinct, or obsolete, toward edge of each web; three outer rectrices (on each side) with terminal half or more of inner web white, this encroaching more or less on inner portion of outer web, the remainder of these rectrices coarsely and irregularly barred with black and dull tawny-ochraceous, the latter largely predominating on terminal half (more or less) of outer web, especially on the second and third, and sometimes nearly uniform—the tawny-ochraceous extending across tip of inner web and even tinging, more or less strongly, the white along inner edge; wing-coverts with large, irregular spots or blotches of black and with a transverse series of large buff spots across middle portion; primaries and primary coverts dull black, coarsely and irregularly spotted with tawny or tawny-ochraceous, the spots much less distinct and more broken on inner webs, which are largely uniform dusky basally; loreal, orbital, auricular, and malar regions, chin, and upper throat dull ochraceous or clay color, narrowly barred with dusky; lower throat deep buff to buffy white, forming a conspicuous transverse band, the anterior portion rather broadly barred with black; chest and breast brown (varying from grayish brown to tawny-brown), finely vermiculated or stippled with dusky (the upper chest or lower foreneck more closely barred), the center of the breast with several irregular large spots or blotches of buff or buffy white; abdomen and flanks dull buff to dull ochraceous-buff, irregularly barred with dusky and with occasional more or less distinct triangular spots of the general ground color; under tail-coverts clearer buff or ochraceous-buff, irregularly, and very variably, barred (more or less) with dusky; bill brown, darker terminally; iris dark brown; feet brownish; length (skins), 280–320 (300); wing, 206.5–225 (213.9); tail, 138.5–151 (144.1); exposed culmen, 9–14.5 (12.5); tarsus, 17.5–19 (18.4); middle toe, 17–19 (18.4).<sup>a</sup>

*Adult female*.—Similar to the adult male but without the white areas on inner webs of lateral rectrices, which are irregularly marbled or mottled with black on a light tawny-ochraceous or tawny-buff ground, both webs of the three outer rectrices (on each side) being more or less broadly tipped with nearly immaculate light tawny-ochraceous or tawny-buff; length (skins), 260–300 (282); wing,

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<sup>a</sup> Twelve specimens.



201.5–215 (209); tail, 130–144 (136.4); exposed culmen, 9–13.5 (11.7); tarsus, 17–19 (17.9); middle toe, 17.5–19.5 (17.7).<sup>a</sup>

*Young female*.—Similar to the adult female in “pattern” and coloration of tail, primaries, and primary coverts, but otherwise different; scapulars and middle wing-coverts ochraceous-buff, irregularly barred with black; pileum more grayish, with small spots, instead of streaks, of black; under parts barred with black on a light brownish buffy ground, without vermiculations, mottling, or spots, and band across lower throat indistinct or obsolete.

Lower Austral or Austroriparian Zone of eastern United States; breeding from southern Virginia (Northampton, Surry, James, and Warwick counties), southern Ohio (?), southwestern Indiana, southern Illinois, southern Missouri (Shannon and Carter counties), and southeastern Kansas (Chautauqua County) southward to the Gulf States (Florida to Texas); west to central Texas (Bexar, Falls, Kerr, Kinney, and Milam counties); in winter south to Bahamas (Andros and Great Inagua Islands), Cuba (Remédios; San Pablo; Isle of Pines), Jamaica, Haiti, Porto Rico, Guatemala (Dueñas), Nicaragua (San Juan del Sur), Costa Rica (Las Cruces de Candelária; Guadalupe; near San José; Río Sísola), Panamá (Volcán de Chiriquí and Boquete, Chiriquí), and Colombia (Medellín, Antioquia). Occasional or casual northward to Maryland, Massachusetts (Revere, Oct., 1884), Nova Scotia (Pictou), Ontario (Point Pelee, May 19 and 21, 1896), West Virginia (Greenbrier Co., April 23, 1897), and south-central Kansas (Wichita, June 12, 1898).

[*Caprimulgus*] *carolinensis* GMELIN, Syst. Nat., i, pt. 2, 1789, 1028 (based on *Le Tette-chèvre de la Caroline* Brisson, Orn., ii, 475).—LATHAM, Index Orn., ii, 1790, 584.—GRAY, Hand-list, i, 1869, 58, no. 560.—SHARPE, Hand-list, ii, 1900, 85.

<sup>a</sup> Sixteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Two adult males from South Carolina and Georgia.....	211.5	141.2	13.2	18.2	17.5
Five adult males from Florida.....	213.8	144.1	12.2	18.4	18.8
Four adult males from Texas.....	216.1	145.9	12.7	18.6	18.7
One adult male from Costa Rica (November).....	210.5	143	9	18	17
FEMALES.					
Three adult females from South Carolina and Georgia.....	210.8	138	12.3	17.7	18
Three adult females from Florida.....	209.8	132.8	12	18.3	18.3
Five adult females from Texas.....	207.3	135.2	11	17.9	18.2
One adult female from Mississippi.....	208.5	136.5	12	18.5	18
One adult female from Nicaragua (January).....	209	134	12.5	18	18.5
One adult female from Cuba.....	210.5	141	12.5	17.5	19.5
One adult female from Jamaica (March).....	210.5	142	12	17	19
One adult female from Indian Territory.....	207	141	10.5	18.5	18

- Caprimulgus carolinensis* VIEILLOT, Nouv. Dict. d'Hist. Nat., x, 1817, 232.—WILSON, Am. Orn., vi, 1817, 95, pl. 54, fig. 2 (Virginia; Tennessee).—STEPHENS, Shaw's Gen. Zool., x, 1824, 149.—AUDUBON, Orn. Biog., i, 1831, 273, pl. 52; v, 1839, 401; Synopsis, 1839, 31; Birds Am., oct. ed., i, 1840, 151, pl. 41.—D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Ois., 1839, 96.—(?) McCALL, Proc. Ac. Nat. Sci. Phila., 1851, 215 (New Mexico; June, July).—KOENIG-WARTHAUSEN, Journ. für Orn., 1868, 368 (nesting; descr. eggs).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 565.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 383.—WOODRUFF, Auk, xxv, 1908, 201, 214 (Shannon and Carter counties, Missouri, common).—SCLATER, Revised List Birds Jamaica, 1910, 10.
- C[aprimulgus] carolinensis* RIDGWAY, Ann. Lyc. N. Y., x, 1874, 376 (s. Illinois).—HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 44.
- Antrostomus carolinensis* ("GOULD, Icones Avium, 1838," BONAPARTE, Geog. and Comp. List, 1838, 8.—CASSIN, Cat. Caprim., 1851, 12.—CABANIS, Journ. für Orn., 1856, 6 (Cuba).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 147; Cat. N. Am. Birds, 1859, no. 111.—SCLATER, Cat. Am. Birds, 1862, 280; Proc. Zool. Soc. Lond., 1866, 136 (Jamaica; monogr.); Journ. für Orn., 1867, 267.—DRESSER, Ibis, 1865, 470 (s. Texas).—SALVIN, Ibis, 1866, 195 (Dueñas, Guatemala); Proc. Zool. Soc. Lond., 1870, 203, part (Volcan de Chiriqui, Panama).—GUNDLACH, Repert. Fisico-Nat. Cuba, i, 1866, 283; Journ. für Orn., 1874, 120 (Cuba); 1878, 159, 172 (Porto Rico); Anal. Soc. Esp. Hist. Nat., vii, 1878, 201 (Porto Rico); Orn. Cubana, ed. 1895, 103.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120 (Las Cruces de Candelaria, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 314 ((Guadalupe and Las Cruces de Candelaria, Costa Rica).—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 300 (e. Florida, resident); Bull. Am. Mus. Nat. Hist., i, 1886, 248 (Revere, Massachusetts, 1 spec., Oct., 1884); Auk, xvii, 1900, 175 (Wichita, Kansas, 1 spec., April, 1889).—COUES, Check List, 1873, no. 264; 2d ed., 1882, no. 369.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 410, pl. 46, fig. 1.—RIDGWAY, Bull. Nutt. Orn. Club, iii, 1878, 165 (Mt. Carmel, Illinois); Proc. U. S. Nat. Mus., iii, 1880, 188; Nom. N. Am. Birds, 1881, no. 353; Orn. Illinois, i, 1889, 367.—MERRILL (J. C.), Proc. U. S. Nat. Mus., i, 1878, 146 (Ft. Brown, Texas).—MAYNARD, Oologist, v, 1879, 2 (nesting habits).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 531 (Medellin, Antioquia, Colombia).—BROWN (N. C.), Bull. Nutt. Orn. Club, iv, 1879, 11 (Coosada, Alabama; song).—SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., v, 1879, 410 (Lomita Ranch, Texas; habits).—CORY, Birds Bahama Is., 1880, 104 (Andros I.; Inagua I.); Bull. Nutt. Orn. Club, vi, 1881, 153 (Haiti); Auk, iii, 1886, 341; Birds West Ind., 1889, 136; Cat. West Ind. Birds, 1892, 105 (Andros and Great Inagua islands, Bahamas; Cuba; Isle of Pines; Jamaica; Haiti; Porto Rico).—OGILBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 56 (Navarro Co., Texas, summer resident; habits).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 375 (San Juan del Sur, Nicaragua).—OSGOOD (F.), Auk, ii, 1885, 220 (Revere, Massachusetts, 1 spec., Oct., 1884).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 416; 2d ed., 1895, no. 416; 3d ed., 1910, 196.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Costa Rica).—COOKE, Bird Migr. Miss. Val., 1888, 135 (Newport, Arkansas, breeding).—RIVES, Proc. Newport Nat. Hist. Soc., Doc. vii, 1890, 66 (Northampton, Surry, and James counties, Virginia; Cobb's I., Virginia, 1 spec.).—NORTHROP, Auk, viii, 1891, 73 (Andros I., Bahamas; food).—ARTWATER, Auk, ix, 1892, 235 (San Antonio, Texas, summer resident).—SCOTT, Auk, ix, 1892, 276 (Jamaica, Feb.).—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 301 (San Pablo, s. Cuba).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 142, pl. 1, figs. 8, 9 (eggs).—PIERS, Trans. Nova Scotia Inst. Sci., ser. 2, i, 1895, 405 (Pictou, Nova Scotia, 1 spec.).—CHERRIE, Contr. Orn. San Dom., 1896, 18

- (Santo Domingo, Feb.).—SURBER, Auk, xv, 1898, 61 (Greenbrier Co., West Virginia, 1 spec., April 23).—STONE, Auk, xv, 1898, 330 (bird-eating habits).—LANTZ, Auk, xv, 1899, 187 (near Wichita, Kansas, June).—THAYER (G. H.), Auk, xvi, 1899, 273 (bird-eating habits).—BAILEY (Florence M.), Birds W. U. S., 1902, 222.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 26 (Boquete, Panama, 4,500 feet, March).—COLVIN, Auk, xxii, 1905, 81 (Chautauqua Co., Kansas, summer resident).—FLEMING, Auk, xxiii, 1906, 343 (Point Pelee, Ontario, 1 spec., May 19, 1906).—TAVERNER and SWALES, Wilson Bull., no. 61, 1907, 135 (Point Pelee, 1 spec., May 21, 1906).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 505 (near San José and Rio Sicsola, Costa Rica).—LACEY, Auk, xxviii, 1911, 210 (Kerrville, Texas, breeding).
- [*Antrostomus*] *carolinensis* BONAPARTE, Consp. Av., i, 1850, 60.—GUNDLACH, Journ. für Orn., 1861, 330 (Cuba).—COUES, Key N. Am. Birds, 1872, 180.—SCLATER and SALVIN, Nod. Av. Neotr., 1873, 96.—CORY, List Birds West Ind., 1885, 16.
- Antrostomus carolinensis* CABANIS and HEINE, Mus. Hein., iii, 1860, 90 (Cuba).—NEWTON, Handb. Jamaica, 1881, 109.—COUES, Key N. Am. Birds, 2d ed., 1884, 451.—RIDGWAY, Man. N. Am. Birds, 1887, 298.
- [*Antrostomus carolinensis*] BAILEY (H. H.), Auk, xxv, 479 (Warwick Co., Virginia, breeding); xxvi, 1909, 306 (Newport News, Virginia, breeding).
- Antrostomus carolinensis* CORY, Birds Haiti and San Dom., 1885, 84.
- Caprimulgus lucifugus* BARTRAM, Travels Florida, etc., 1791, 290.
- Caprimulgus rufus* (not of Boddaert) VIEILLOT, Ois. Am. Sept., i, 1807, 57, pl. 25.
- Caprimulgus brachypterus* STEPHENS, Shaw's Gen. Zool., x, pt. 1, 1817, 150 (based on *Short-winged Goatsucker* Pennant, Arctic Zool., ii, 434).

### ANTROSTOMUS RUFUS RUFUS (Boddaert.)

#### RUFUS GOATSUCKER.

Very closely resembling *A. carolinensis* in coloration, even to the pattern and color of the lateral rectrices in the adult male, but slightly darker and smaller, and rectal bristles without lateral filaments.

*Adult male*.—General color of upper parts tawny-brown (usually near russet), vermiculated with dusky and streaked and spotted with black; pileum narrowly streaked with black laterally, the streaks much broader on median portion, especially on crown, where sometimes enlarged into irregular longitudinal spots; back similarly marked, but the streaks mostly smaller, the rump with streaks less distinct, sometimes obsolete; scapulars with large subterminal irregular spots or blotches of black, usually margined with deep ochraceous-buff, their inner webs largely buffy, sparsely vermiculated with dusky; wing-coverts with smaller subterminal black spots; inner secondaries ("tertials") pale dull buff, vermiculated and sprinkled with dusky and with a more or less distinct median streak, or series of small irregular spots, of black, the other secondaries dull black marbled with cinnamon-rufous, or with irregular spots of the same disposed in transverse series; primaries dull black spotted with cinnamon-rufous, their terminal portion marbled with dull light cinnamon-rufous and dusky; primary coverts dull black spotted with cinnamon-rufous; middle pair of rectrices irregularly marbled, streaked and spotted with black and light cinnamon-rufous (the



former usually predominating), the black spots usually forming a chain of very irregular blotches along the median line, but sometimes prolonged laterally so as to form more or less distinct, but always irregular or broken oblique or V-shaped bars; second pair similarly colored, but the black relatively greater in extent; third, fourth, and fifth pairs with terminal half (approximately) of inner web and a less extent of outer web, next to shaft, white, these white areas broadly margined, except on edge of inner web, with dull ochraceous-buff or clay color, the under surface of these areas wholly tawny or tawny-ochraceous; proximal portion of these rectrices black with rather broad broken bars or transverse spots of light cinnamon-rufous; lores russet or chestnut, the suborbital, malar, and auricular regions similar but narrowly barred with dusky; chin and throat russet to light chestnut, narrowly and rather sparsely barred with black; across the lower throat or foreneck a broad band of pale buff to ochraceous-buff, the underlying portion of the feathers rather broadly barred with black; chest and breast vermiculated, finely barred, or transversely spotted with sooty black and light russet (either predominating) the center of breast with large spots of buffy white or pale buff; the vermiculated light brown coloration of the lower breast passes gradually into buff on rest of under parts, this broken by irregular narrow bars and vermiculations of dusky, the sides and flanks with more or less conspicuous large spots of immaculate buff or buffy white; under wing-coverts dull ochraceous-buff or clay color, barred with dull black; inner webs of primaries dusky with irregular, broken, transverse spots of cinnamon-rufous; bill brown, becoming blackish at tip.<sup>a</sup>

*Adult female*.—Similar to the adult male but lateral rectrices without the white and buff terminal areas, but irregularly barred and marbled with black and light cinnamon-rufous or cinnamon-buff, like middle rectrices, and rather narrowly tipped with cinnamon-rufous or cinnamon-buff; length (skins), 240–250 (247); wing, 176–179 (177.7); tail, 112.5–120 (116.9); exposed culmen, 13–16.5 (15); tarsus, 15–17 (16); middle toe, 16–18.5 (16.9).<sup>b</sup>

<sup>a</sup> From lack of specimens I am unable to give measurements of the adult male of this form, the above description being based on adult females plus tail-markings in the adult male of *A. r. otiosus*.

<sup>b</sup> Four specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
FEMALES.					
One adult female from Venezuela.....	176	117	13	16	16
Two adult females from Colombia.....	178	119	15.5	15.5	16.5
One adult female from Panama (near Panama City).....	179	112.5	16	17	18.5
Two adult females ( <i>A. r. otiosus</i> ) from Santa Lucia.....	188.5	124.2	18.2	16	18

*Young female (full grown).*<sup>a</sup>—Pileum pale buff and buffy grayish white suffused with pale tawny-ochraceous, each feather with a small central or subterminal spot (mostly of broadly rhomboid or subcordate form) of black; rump and upper tail-coverts ochraceous-buff to pale russet or tawny, barred, more or less distinctly, with blackish; wing-coverts (in part) pale grayish buffy with sparse, fine vermiculations of dusky and irregular mesial streaks of black; under parts posterior to breast buff or light ochraceous-buff, narrowly and rather indistinctly barred with dusky; rest of the plumage (belonging to new dress) as in adult female.

Panamá (Volcán de Chiriquí; near Panama City) and southward through Colombia (San Sebastián and Montajira, Santa Marta), Venezuela (San Cristóbal; Caracas; San Julián; Escoriál, 3,000 feet), Cayenne, and Brazil (Pernambuco; Pará; Bahia; Rio de Janeiro; Rio Araguaya; São Paulo; Novo Fribourgo) to northern Argentina (Ocampo).<sup>b</sup>

*Caprimulgus rufus* BODDAERT, Tabl. Pl. Enl., 1783, 46 (based on *Crapaud-Volant ou Tette-Chèvre de Cayenne* Daubenton, Pl. Enl., pl. 735.)—VIEILLOT, Nouv. Dict. d'Hist. Nat., x, 1817, 244, part; Enc. Méth., 1823, 541.—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 566, part (Volcan de Chiriqui, Panama; San Cristobal and Caracas, Venezuela; Pará, Pernambuco, Bahia, and Rio de Janeiro, Brazil).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 385.—IHERING, Rev. Mus. Paulista, iii, 1899, 269 (Sao Paulo, s. Brazil); iv, 1900, 160 (Novo Fribourgo, s. Brazil), 255 (descr. eggs).—HELLMAYR, Novit. Zool., xv, 1908, 79 (Rio Araguaya, Brazil; crit.).—BERLEPSCH, Novit. Zool., xv, 1908, 269 (Cayenne).—HARTERT and VENTURI, Novit. Zool., xvi, 1909, 224 (Ocampo, Argentina; descr. eggs).

[*Caprimulgus*] *rufus* GMELIN, Syst. Nat., i, pt. 2, 1789, 1030.—LATHAM, Index Orn., ii, 1790, 586.—GRAY, Hand-list, i, 1869, 59, no. 669.—SHARPE, Hand-list, ii, 1900, 85, part.

[*Caprimulgus*] *rufus* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 43, part.

[*Antrostomus*] *rufus* BONAPARTE, Consp. Av., i, 1850, 61.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96.

*Antrostomus rufus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 183.—SCLATER, Proc. Zool. Soc. Lond., 1866, 136 (monogr.); Journ. für Orn., 1867, 267.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1875, 237 (San Cristobal, Venezuela).—TACZANOWSKI, Orn. du Pérou, i, 1884, 219.—BANGS, Proc. New Engl. Zool. Club, i, 1899, 78 (San Sebastian, Santa Marta, Colombia).—ROBINSON and RICHMOND, Proc. U. S. Nat. Mus., xxiv, 1901, 171 (San Julian, Venezuela).

*Antrostomus rufus* THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1906, 216 (Sabana de Panama).

*Antrostomus rutilus* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 385.—EULER, Journ. für Orn., 1869, 253 (Brazil; habits).

[*Caprimulgus*] *rutilus* GRAY, Hand-list, i, 1869, 59, no. 670.

*Antrostomus ornatus* SCLATER, Proc. Zool. Soc. Lond., for 1866, pt. iii, April, 1867, 586, pl. 45 (Rio de Janeiro, Brazil; coll. Brit. Mus. and P. L. Sclater).

<sup>a</sup> The two specimens examined have mostly assumed the adult plumage; therefore the young plumage of certain parts only can be described.

<sup>b</sup> I have not seen specimens from south of the Guianas, Venezuela, and Colombia.

[*Caprimulgus*] *ornatus* GRAY, Hand-list, i, 1869, 59, no. 663.

*Antrostomus cortapau* PELZELN, Orn. Bras., i. Abth., 1868, 13 (Ponte de Guaporé, Corrego Funda, Barro de Rio Negro, and Pará, Brazil; ex Natterer, manuscript), 53 (description; distinguished from *A. rufus*; Engenho do Cap. Gama, Novi Friburgi, Bahia, etc.).

### ANTROSTOMUS RUFUS OTIOSUS Bangs.

#### SANTA LUCIA RUFOUS GOATSUCKER.

Similar to *A. r. rufus* but decidedly larger, with relatively larger bill, and coloration averaging darker and less rufescent, with black streaks or longitudinal spots on pileum averaging broader, bars on under tail-coverts usually broader, and cinnamon-rufous spots on inner webs of primaries usually smaller, sometimes almost wanting.

*Adult male*.—Length (skins), 265–278 (274); wing, 183–194 (189); tail, 125.5–132.5 (128.8); exposed culmen, 16.5–19 (17.7); tarsus, 15–18 (16.4); middle toe, 17–18.5 (17.7).<sup>a</sup>

*Adult female*.—Length (skins), 258–267 (262); wing, 188–189 (188.5); tail, 124–124.5 (124.2); exposed culmen, 18–18.5 (18.2); tarsus, 16; middle toe, 18.<sup>b</sup>

Island of Santa Lucia, Lesser Antilles.

*Antrostomus rutilus* (not of Burmeister) SEMPER, Proc. Zool. Soc. Lond., 1872, 652 (Santa Lucia, Lesser Antilles; habits).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 169 (Santa Lucia).

*Antrostomus rufus* (not *Caprimulgus rufus* Boddaert) CORY, Auk, iii, 1886, 341 (Santa Lucia); Birds West Ind., 1889, 136 (Santa Lucia); Cat. West. Ind. Birds, 1892, 105 (Santa Lucia).

[*Antrostomus*] *rufus* CORY, List Birds West Ind., 1885, 16 (Santa Lucia).

*Caprimulgus rufus* (not of Boddaert) HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 566, part (Santa Lucia).

[*Caprimulgus*] *rufus* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 43, part (Santa Lucia).

[*Caprimulgus*] *rufus* SHARPE, Hand-list, ii, 1900, 85, part (Santa Lucia).

*Antrostomus rufus otiosus* BANGS, Proc. Biol. Soc. Wash., xxiv, June 23, 1911, 188 (Santa Lucia, Lesser Antilles; coll. Mus. Comp. Zool.).

### ANTROSTOMUS CUBANENSIS Lawrence.

#### CUBAN GOATSUCKER.

*Adult male*.—Pileum deep grayish brown, intermixed, more or less, with pale brownish gray laterally, irregularly vermiculated with dusky and streaked with sooty black, the streaks broader and more or less serrately-edged on median portion; hindneck similar but the blackish streaks less distinct; back, scapulars, rump, and upper tail-coverts light brownish gray or grayish brown irregularly vermiculated and stippled with dusky and streaked with sooty black; scapulars dull buffy whitish, more or less suffused with very pale brownish gray, freckled and

<sup>a</sup> Six specimens.

<sup>b</sup> Two specimens.



vermiculated with dusky and with a very large subterminal, irregularly triangular, spot or blotch of black; lesser wing-coverts sooty black, minutely freckled with light brown, those along anterior edge intermixed with dull whitish; middle and greater coverts similar but the blackish mainly restricted to an irregular median broad streak, the lateral portions of the feathers freckled or vermiculated with pale grayish brown and buffy whitish, many of these larger coverts with an irregular terminal spot of dull buffy whitish, broken by irregular markings of dusky; inner secondaries ("tertials") pale grayish brown or brownish gray, freckled and vermiculated with dusky, and with a broad irregular median streak of black; other secondaries dusky grayish brown or sooty, freckled with paler, these paler markings disposed in the form of indistinct transverse bands; primaries and primary coverts brownish black, their outer webs spotted with dull ochraceous-buff or pale tawny-rufous, these spots broken by irregular markings of dusky, the terminal portion of primaries (especially inner webs) dark grayish brown or dusky, mottled and freckled with paler; middle pair of rectrices grayish brown or brownish gray, freckled and vermiculated with dusky, and crossed by irregular (sometimes indistinct or broken) narrow bands of brownish black; next pair similar but darker distally and tipped with buffy or buffy whitish, sometimes much broken by dusky vermiculations; three outer pairs of rectrices mostly (sometimes wholly) uniform brownish black subterminally, and very broadly tipped with white, the white area about 20-25 mm. in extent (along shaft), of nearly equal extent on the three rectrices, the anterior outlines running nearly straight across both webs, and usually margined terminally with dull ochraceous-buff; loreal and auricular regions brown, narrowly barred with black; anterior and lower portions of malar region buffy white, the upper and posterior portions brownish black, sparsely freckled with light brown; chin and throat sooty black, freckled or irregularly and narrowly barred with pale brown; across the extreme lower throat a band of buff or pinkish buff, this sometimes sparsely spotted with black; chest sooty blackish, freckled or vermiculated with pale brown or buffy; across upper breast a broken band or transverse cluster of very large irregular spots of buffy whitish on a ground of sooty black vermiculated or freckled with pale brown or buffy, the lower breast similar but mostly unspotted; rest of under parts of body sooty black and pale buffy brown or buffy in irregular vermiculations and marked with a greater or less number of large dull buffy whitish spots, like those on upper breast, the markings on the flanks disposed more in the form of transverse bars; under tail-coverts buff or brownish buff with irregular V-shaped markings of dusky; under-wing coverts barred with sooty black and dull ochraceous-buff; inner webs of primaries dusky with

small irregular or broken spots of dull ochraceous-buff; bill brown, blackish terminally; iris dark brown; legs and feet brownish, the toes darker terminally; length (skins), 270–272 (271); wing, 177–189 (181.8); tail, 131.5–141.5 (134.8); exposed culmen, 14–15 (14.5); tarsus, 17–19 (18); middle toe, 18–18.5 (18.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but lateral rectrices more narrowly tipped with white and ochraceous-buff, these light-colored tips about 15 mm. in extent (at widest part) on outer pair, about 8–10 mm. wide on third pair, with more or less of white centrally, especially on fourth and inner web of fifth (outermost) rectrices; length (skin), 255; wing, 176; tail, 121; exposed culmen, 15.5; tarsus, 18; middle toe, 18.<sup>b</sup>

Island of Cuba (Bayate; Cienega de Zapata island; coast of Manzanillo) and Isle of Pines.

*Caprimulgus vociferus* (not of Wilson) D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Ois., i, 1839, 98.—LEMBEYE, Aves de la Isla de Cuba, 1850, 130.

*Antrostomus vociferus* CABANIS, Journ. für Orn., 1856, 6.—BREWER, Proc. Bost. Soc. Nat. Hist., vii, 1850, 306.

*Antrostomus cubanensis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862 (published May, 1860), 260 (Cienega de Zapata I. and coast of Manzanillo, Cuba; coll. G. N. Lawrence).—ALBRECHT, Journ. für Orn., 1861, 203 (translation of orig. descr.).—GUNDLACH, Repert. Fisico-Nat. Cuba, i, 1866, 283; Journ. für Orn., 1874, 120 (habits); Orn. Cubana, ed. 1895, 102.—SCLATER, Proc. Zool. Soc. Lond., 1866, 585 (crit.).—CORY, Auk, iii, 1886, 342; Birds West Ind., 1889, 137; Cat. West Ind. Birds, 1892, 105, 128.—BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 203 (Isle of Pines).

[*Antrostomus*] *cubanensis* GUNDLACH, Journ. für Orn., 1861, 330.—CORY, List Birds West Ind., 1885, 16.

*Antrost[omus] cubanensis* GUNDLACH, Journ. für Orn., 1861, 411, in text (crit.).

*A[ntrostomus] cubanensis* RIDGWAY, Man. N. Am. Birds, 1887, 298.

*Antrostomus cubanensis* CORY, Cat. West Ind. Birds, 1892, 12.

*Antrostomus macromystax* var. *cubanensis* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 409.

[*Caprimulgus*] *cubanensis* GRAY, Hand-list, i, 1869, 59, no. 664.—SHARPE, Hand-list, ii, 1900, 85.

*C[aprimulgus] cubanensis* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 43.

*Caprimulgus cubanensis* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 571.

### ANTROSTOMUS VOCIFERUS VOCIFERUS (Wilson).

#### WHIPPOORWILL.

*Adult male*.—General color of upper parts mixed grayish brown and brownish gray, minutely vermiculated and stippled with dusky; pileum streaked with black, the streaks narrow and linear (sometimes obsolete) on lateral portions, much broader and more guttate along median line, where usually coalesced and forming an irregular stripe; scapulars with large irregular spots or blotches of black, these usually margined, in part, with irregular narrow areas of buff

<sup>a</sup> Three specimens.

<sup>b</sup> One specimen.

or light ochraceous, the interscapular region, rump, and upper tail-coverts more or less distinctly streaked with black; middle pair of rectrices brownish gray, freckled or coarsely vermiculated with dusky and crossed by about seven to nine broken irregular bars of blackish, the next pair similar but darker; three outer pairs of rectrices extensively white, on both webs, distally,<sup>a</sup> this decreasing in extent from the third to the outermost, on which the white on outer web is much less in extent than on inner web; remaining (proximal) portion of these three outer rectrices brownish black, more or less broken by incomplete and irregular bars of brownish buff or light tawny-ochraceous; general color of wing-coverts light brown or grayish brown, finely vermiculated and stippled with dusky, and much broken by irregular mottlings or spotting of light brownish buff, ochraceous-buff, or dull light tawny-ochraceous, the black often in form of irregular shaft-streaks; primaries and primary coverts brownish black, conspicuously spotted on outer webs with ochraceous-buff to tawny-ochraceous or clay color, their inner webs with bars of the same color, these not extending to shaft, and becoming paler toward edge of the web; terminal portion of primaries (especially on inner webs) confusedly mottled with grayish brown and dusky; loreal and auricular regions narrowly barred with pale tawny or dull ochraceous-buff and dusky; malar region, chin, and throat, brownish black, more or less distinctly barred (narrowly) with light tawny-brownish, the first usually more or less flecked with white on anterior portion; lower throat crossed by a band of white, this often suffused with light ochraceous-buff, especially on median portion; chest and breast with plumage brownish black beneath surface (fading into gray basally), the exposed surface vermiculated with pale grayish brown and dusky and spotted, especially on chest and sides of breast, with pale brownish buff or pale clay color, the abdomen similarly marked but general color paler, the darker markings more in the form of irregular narrow transverse bars; under tail-coverts light buff to pale clay color, usually with a greater or less number of irregular bars (often V-shaped) of dusky; bill brown, darker terminally; iris dark brown; feet brownish; length (skins), 220–250 (233); wing, 149–168.5 (152.4); tail, 113.5–128 (123); exposed culmen, 10.5–14 (13.3); tarsus, 15.5–18 (16.5); middle toe, 15.5–18 (16.6).<sup>b</sup>

*Adult female*.—Similar to the adult male but without white on lateral rectrices, the three outer pairs of which are broadly tipped with buffy or pale clay color, and general coloration averaging browner (more

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<sup>a</sup> On the third and fourth rectrices the white occupies the distal half, approximately, or slightly less. On the under surface of the rectrices these white areas are usually more or less strongly buffy.

<sup>b</sup> Fifteen specimens.



suffused with buffy); length (skins), 230–252 (235); wing, 147–163 (155.3); tail, 105–123.5 (116); exposed culmen, 10–14 (12.5); tarsus, 16–18 (16.6); middle toe, 16–17.5 (16.5).<sup>a</sup>

*Young male*.—Similar to the adult male in “pattern” and coloration of lateral rectrices, as well as of primaries and primary coverts, but rest of plumage quite different, the wing-coverts and scapulars deep brownish buff or clay color, the former with coarse and irregular small spots of black, the latter with very large irregular spots of black, the under parts barred with dusky on a brownish buffy ground and, like most of the upper parts, without fine vermiculations, the pileum spotted instead of streaked with black, and the band across lower throat indistinct, more or less broken by dusky barring, and buffy instead of white.

*Young female*.—Similar to the young male, but three lateral rectrices broadly tipped with ochraceous-buffy instead of having a large white distal area.

Eastern United States and southern Canada; north to Nova Scotia, New Brunswick, Maine, Vermont, southern Quebec, Ontario, southern Keewatin, Manitoba (Red River Settlement, lat. 50°; Big Plain; Turtle Mountain; Manitoba House; Winnipeg; Carberry) and Saskatchewan; west to eastern edge of the Great Plains, in eastern Nebraska, Kansas, etc., during migration to west-central Texas (Concho, Kerr, and Kendall counties), casually to eastern Colorado (Ft. Collins); breeding southward to northern Louisiana, southern Georgia, northwestern Florida (Leon County), eastern Texas(?), etc.; wintering in Gulf States (Florida to southeastern Texas) and

<sup>a</sup> Fifteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
One adult male from e. Massachusetts.....	168.5	128	13	17	17
One adult male from Michigan.....	159	120	13.5	16.5	16
One adult male from Manitoba (Carberry).....	159.5	122	11.5	17	17
Four adult males from Pennsylvania.....	160.5	124.7	11.7	16.6	16.7
Four adult males from District of Columbia (1) and Virginia (3).....	162.1	123.2	13.2	16.9	17.1
Two adult males from s. e. Illinois.....	149.5	118.7	13.2	15.7	16
One adult male from Texas (San Antonio, March 31).....	158	127	11.5	15.5	15.5
One adult male from Florida (April).....	151.5	118.5	13.5	16	16
FEMALES.					
Two adult females from Pennsylvania.....	156	119	13	16.5	17
Five adult females from Maryland (2), Virginia (2), and West Virginia (1).....	155.1	115	12.9	16.9	16.6
Six adult females from s. Illinois (4), Missouri (1), and Iowa (1).....	154.7	116.4	12.1	16.6	16.5
Two adult females from Texas (April).....	157.5	114	12	16.2	16

southward through eastern Mexico, in State of Tamaulipas, Vera Cruz (Orizaba; Jalapa), Puebla (Tlalcótepec; Jaguey de la Magdalena), etc.,<sup>a</sup> to Guatemala (Cobán; between Cobán and Chiséc; Sonteh; San Gerónimo) and Salvador (La Libertad), casually to Costa Rica (near San José, 1 specimen). Accidental in Porto Rico.

"*Caprimulgus minor* FORST[ER], Cat. An. N. A., 1771, 13."

*Caprimulgus virginianus* (not of Gmelin) VIEILLOT, Ois. Am. Sept., i, 1807, 55, part, pl. 23 (text mixed with that pertaining to *Chordeiles virginianus*).

*Caprimulgus vociferus* WILSON, Am. Orn., v, 1812, 71, pl. 41, figs. 1, 2, 3 (eastern U. S., probably near Philadelphia).—BONAPARTE, Synopsis Birds U. S., 1828, 62; Proc. Zool. Soc. Lond., 1837, 119 (Guatemala).—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 336 (north shore of Lake Huron).—AUDUBON, Orn. Biog., i, 1831, 422, pl. 82; v, 1839, 405; Synopsis, 1839, 31; Birds Am., oct. ed., i, 1840, 155, pl. 42.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 614.—THIENEMANN, Fortpfl. Vög., 1854, pl. 42, fig. 17 (egg).—WILLIS, An. Rep. Smithson. Inst. for 1858 (1859), 281 (Nova Scotia, rare summer resident).—TRIPPE, Proc. Essex Inst., vi, 1871, 114 (Minnesota).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 5 (crit.), 188; Nom. N. Am. Birds, 1881, no. 354.—MERRIAM, Bull. Nutt. Orn. Club, vi, 1881, 231 (Adirondack Mts., New York).—BROWN (N. C.), Proc. Portland Soc. N. H., 1882, [19] (Portland, Maine, rare); Bull. Nutt. Orn. Club, vii, 1882, 40 (Boerne, Kendall Co., Texas,<sup>b</sup> 1 spec., April 2), 149 (Houlton, Maine, rare).—AGERSBORG, Auk, v, 1885, 283 (s. e. South Dakota).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 568 (Rio Fuerte, Sinaloa; <sup>b</sup> Sierra de Tepic; <sup>b</sup> Jalapa, Vera Cruz; San Geronimo, Sonteh, and Coban, Guatemala; La Libertad, Salvador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 385.

*C[aprimulgus] vociferus* MAXIMILIAN, Journ. für Orn., 1858, 98.—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 376 (Illinois).—HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 42.

*[Caprimulgus] vociferus* SHARPE, Hand-list, ii, 1900, 84.

*Antrostomus vociferus* BONAPARTE, Geog. and Comp. List, 1838, 8.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 183; Journ. Ac. Nat. Sci. Phila., ii, 1852, 122; Cat. Caprim. Mus. Ac. Nat. Sci. Phila., 1852, 13; Illustr. Birds Calif., Tex., etc., 1855, 236.—BREWER, N. Am. Ool., i, 1857, 84.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 148; Cat. N. Am. Birds, 1859, no. 112.—SCLATER, Proc. Zool. Soc. Lond., 1859, 367 (Jalapa, Vera Cruz); 1866, 137 (monogr.); Cat. Am. Birds, 1862, 280; Journ. für Orn., 1867, 268.—SALVIN and SCLATER, Ibis, 1860, 275 (Coban and San Geronimo, Guatemala).—VERRILL (A. E.), Proc. Essex Inst., iii, 1862, 144 (Oxford Co., Maine, common summer resident).—BLAKISTON, Ibis, 1863, 55 (Red River Settlement, lat. 50°, Manitoba; Saskatchewan; Red Lake R., Minnesota).—MCLWRAITH, Proc. Essex Inst., v, 1866, 83 (Hamilton, Ontario).—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 300 (e. Florida, winter resident); iii, 1872, 129, 179 (Leavenworth, Kansas).—SNOW, Birds Kansas, 1873, 3.—COUES, Check List,

<sup>a</sup> The British Museum "Catalogue of Birds" (xvi, 1892, 570) lists two specimens from western Mexico (Rio Fuerte, Sinaloa, and Sierra de Tepic), but these may be *A. v. macromystax*.

<sup>b</sup> Specimens from these localities may represent *A. v. macromystax*, especially the second and third.

- 1873, no. 265; 2d ed., 1882, no. 397; Birds Northwest, 1874, 260 (Pembina, North Dakota; etc.); Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 613 (Pembina).—GENTRY, Proc. Ac. Nat. Sci. Phila., 1874, 105 (habits).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 413, pl. 46, fig. 2; special ed., ii, 187, plate facing p. 413.—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 31 (Tehuantepec City, Oaxaca, Nov.).—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 146 (Ft. Brown, Texas).—SENNETT, Bull. U. S. Geol. and Geog. Terr., v, 1879, 411 (Lomita Ranch, Texas; resident?).—SUMICHRAST, La Naturaleza, v, 1882, 249 (Tehuantepec City).—LANGILLE, Our Birds in their Haunts, 1884, 386 (habits; notes).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 158 (Tlalcotepec and Jaguey de la Magdalena, Puebla, Dec.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 417.—SETON, Auk, iii, 1886, 156 (Big Plain, Turtle Mt., Red River Valley, and Manitoba House; abundant summer resident).—LLOYD, Auk, iv, 1887, 191 (e. part of Concho Co., Texas).—COOKE, Bird Migr. Miss. Val., 1888, 135 (localities and dates of migration); Auk, xxvi, 1909, 413 (Ft. Collins, Colorado, 1 spec., Sept. 14).—RIDGWAY, Orn. Illinois, i, 1889, 367.—CORY, Auk, vi, 1889, 276 (Porto Rico; 1 spec.); Cat. West Ind. Birds, 1892, 142 (Porto Rico).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 553 (Winnipeg, etc., Manitoba, common summer resident; habits).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 536 (San José, Costa Rica, 1 spec., Feb. 24).—SCOTT, (W. E. D.), Auk, ix, 1892, 213, 218 (Caloosahatchie R., Florida, winter).—COOK, Bull. 54, Mich. Agric. Exp. Sta., 1893, 91 (lower peninsula of Michigan, common).—GRUNDTVIG, Trans. Wisc. Ac. Sci. etc., 1894, 115 (Shiocton Co., Wisconsin).—TYLER, Auk, xi, 1894, 253 (Tyler, Vermont, 1 spec., May 5, 1894).—ALLEN (F. H.), Auk, xii, 1895, 89 (Cape Breton, Nova Scotia).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 146, pl. 1, figs. 10, 11 (eggs).—BEYER, Proc. Louis. Soc. Nat. Hist. for 1897-99 (1900), 103 (breeding in n. w. Louisiana, wintering in s. part).—PREBLE, North Am. Fauna, no. 22, 1899, 113 (s. Keewatin).—BAILEY (Florence M.), Handb. Birds W. U. S., 1892, 223.—BURNETT, Auk, xxi, 1904, 278 (Ft. Collins, Colorado, 1 spec., Sept. 14, 1903).—WILLIAMS (R. W.), Auk, xxi, 1904, 455 (Leon Co., Florida; a few breeding).—SWALES and TAVERNER, Wilson Bull., no. 55, 1906, 65 (Lake Muskoka, n. w. Ontario).—HALL, Wilson Bull., no. 57, 1906, 125 (w. Adirondacks, New York, 1 spec.).—HUNT, Wilson Bull., no. 58, 1907, 18 (Lake Sebago, Maine).—TAVERNER and SWALES, Wilson Bull., no. 61, 1907, 135 (Point Pelee, Ontario, common summer resident; habits).—ROBERTS, Wilcox's Hist. Becker Co., Minn., 1907, 176 (near Detroit, Becker Co., 1 spec., May 6, 1883).—HOWELL, Auk, xxvi, 1909, 133 (n. Georgia, breeding).—LACEY, Auk, xxviii, 1911, 210 (Kerrville, w. Texas, April, Sept.).
- [*Antrostomus*] *vociferus* BONAPARTE, Consp. Av., i, 1850, 60.—COUES, Key N. Am. Birds, 1872, 180.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96.
- A[ntrostomus]* *vociferus* COUES, Key, 2d ed., 1884, 452.—RIDGWAY, Man. N. Am. Birds, 1887, 299.
- Antrostomus vociferus vociferus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 196.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 505 (Costa Rica, rare winter visitant).
- Antrostomus vocifera* HOWE, Contr. Am. Orn., ii, 1902, 15 (Vermont, breeding).
- Antrostomus vociferans* KOENIG-WARTHAUSEN, Journ. für Orn., xvi, Nov., 1868, 369 (nesting habits).
- Caprimulgus clamator* VIEILLOT, Nouv. Dict. d'Hist. Nat., x, 1817, 234, part (includes *Chordeiles virginianus*).



## ANTROSTOMUS VOCIFERUS MACROMYSTAX (Wagler).

## STEPHENS'S WHIPPOORWILL.

Apparently not constantly different in any color character or set of color characters from *A. v. vociferus*,<sup>a</sup> but averaging decidedly larger and with the rictal bristles very much longer and stouter.

*Adult male*.—Length (skins), 220–265 (238); wing, 162–178.5 (166.3); tail, 114–134.5 (124.2); exposed culmen, 12.5–16 (14.6); tarsus, 15–18.5 (16.8); middle toe, 15.5–19 (16.9).<sup>b</sup>

*Adult female*.—Length (skins), 220–248 (231); wing, 156.5–166.5 (162.1); tail, 114–128 (121.3); exposed culmen, 13.5–15.5 (14.5); tarsus, 15.5–18 (16.9); middle toe, 15.5–18 (16.9).<sup>c</sup>

Southern Arizona (Huachuca, Chiricahua, Santa Rita, Santa Catalina, San Luis, and Whetstone mountains), New Mexico (Big Hatchet Mountains; Ft. Bayard), and southwestern Texas (Chisos Mountains) southward over greater part of Mexico, in States of Sonora (Álamos), Chihuahua (Bravo; Mina Abundancia; Piños Altos; near

<sup>a</sup> The only approach to *average* differences of coloration than I can find on carefully comparing a large series of each form, is that in *A. v. macromystax* the black spots on the scapulars are, as a rule, somewhat more irregular or “ragged,” and the black streaks on the pileum are usually somewhat smaller and less inclined to coalesce along the median line, while the general “tone” of coloration is slightly more brownish (less grayish), especially on the pileum, and particularly in the female. None of these characters, however, except possibly the last, can be relied on, the individual variation being very great in both forms.

The young of *A. v. macromystax*, however, may be very easily distinguished from that of *A. v. vociferus*, the scapulars and wing-coverts being broadly barred with dusky instead of being (except for large black spots on the former and small ones on the latter) immaculate ochraceous-buff. In fact, the young of *A. v. macromystax* is in coloration quite like that of *A. chiapensis* except that the inner webs of the primaries are much more distinctly spotted with tawny cinnamon-rufous.

<sup>b</sup> Twenty-one specimens.

<sup>c</sup> Thirteen specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Seven adult males from Arizona.....	166.5	123.1	14.7	16.8	17.1
One adult male from s. w. Texas (Chisos Mts.).....	169	134.5	15.5	18.5	19
Eight adult males from Chihuahua (5), Sonora (1), and Coahuila (2).....	167.3	123.9	14.2	16.6	16.5
Five adult males from Guerrero (3), Durango (1), and Guanajuato (1).....	164	124	14.8	16.8	17
FEMALES.					
One adult female from s. w. Texas (Chisos Mts.).....	163.5	123	13.5	17.5	17
Two adult females from Arizona.....	162	120	14	17.2	17.5
Five adult females from Chihuahua.....	161.7	121	15.5	16.3	16.9
Five adult females from Jalisco (2), Durango (1), and Guerrero (2).....	162.3	121.9	14.1	17.4	16.8

Colonia Garcia; Jesús Maria), Coahuila (Sierra Guadalupe), Tamaulipas (Galindo; Santa Leonora; Montelunga; Realito), Vera Cruz (Mt. Orizaba, breeding at 8,000 feet), Guanajuato (Guanajuato City), Mexico (Amecameca; Rio Frio, Ixtaccihuatl), Durango (El Salto breeding; Arroyo del Buey), Jalisco (Sierra Nevada; Sierra de Valparaíso; Sierra de Bolaños; Volcán de Colima; La Laguna; Zapotlán), Michoacán (Patzcuaro; Mt. Tancítaro), and Guerrero (Omitéme, breeding; Amula). Oaxaca (La Parada)?

*Caprimulgus macromystax* WAGLER, Isis, xxiv, 1831, 533 (Mexico; coll. Munich Mus.).—HARTERT, Ibis, 1892, 286 (crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 386.

[*Caprimulgus*] *macromystax* SHARPE, Hand-list, ii, 1900, 84.

*Caprimulgus vociferus macromystax* HARTERT, Ibis, April, 1892, 286, in text (crit.).

[*Caprimulgus vociferus*] subsp.  $\alpha$ . *Caprimulgus macromystax* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 570 (Sierra de Valparaíso, Sierra de Bolaños, Volcan de Colima, and Zapotlan, Jalisco; Ajusco, Tenango del Valle, and Rio Frio, Ixtaccihuatl, Mexico; Amula, Guerrero; Oaxaca?; <sup>a</sup> Coban, Santa Barbara, and Volcan de Fuego, Guatemala? <sup>b</sup>).

(?) [*aprimulgus*] *vociferus macromystax* HARTERT, Tierreich, Podarg., Caprim., Macrop., 1897, 43.

*Antrostomus macromystax* CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 184 ("California").—SCLATER, Proc. Zool. Soc. Lond., 1866, 137 (monogr.); Journ. für Orn., 1867, 268.

(?) *Antrostomus macromystax*? SCLATER, Proc. Zool. Soc. Lond., 1858, 296 (La Parada, Oaxaca; crit.).<sup>a</sup>

[*Antrostomus*] *macromystax* SCLATER and SALVIN, Nomin. Av. Neotr., 1873, 96.

*Antrostomus vociferus macromystax* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xi, Jan., 1894, 48; Check List, 2d ed., 1895, no. 417a; 3rd ed. 1910, 197.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 151.—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 43 (Las Vigas, Vera Cruz, 8,000 feet, breeding).—WILSON, Auk, xvi, 1899, 188 (Ft. Bayard, New Mexico, breeding).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 14 (Huachuca Mts., Arizona, 5,000–8,000 feet; habits).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 167 (Arroyo del Buey, n. w. Durango, May 22, 28).—SMITH (A. P.), Condor, ix, 1907, 196 (Whetstone Mts., Arizona, 4,500 feet; habits).—VISHER, Auk, xxvi, 1910, 282 (mts. of Pima Co., Arizona; summer resident in pine belt).—PHILLIPS, Auk, xxviii, 1911, 77 (Galindo, Santa Leonora, Montelunga, and Realito, Tamaulipas).

*Antrostomus v[ociferus] macromystax* SWARTH, Condor, vii, 1905, 78 (Santa Rita Mts., Arizona, 7,000 feet).

*A[ntrostomus] vociferus macromystax* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 299.

*A[ntrostomus] v[ociferus] macromystax* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 223.

*Antrostomus vociferus arizonæ* BREWSTER, Bull. Nutt. Orn. Club, vi, April, 1881, 69 (Chiricahua Mts., Arizona; coll. W. Brewster); vii, 1882, 211 (Santa Rita Mts., Arizona; descr. female and egg).—COUES, Check List, 2d ed., 1882, 185, Addenda, no. 881.—SCOTT, Auk, iii, 1886, 429 (Santa Catalina Mts., Arizona).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 417a.

<sup>a</sup> Perhaps *A. oaxacæ* Nelson.

<sup>b</sup> Probably *A. chiapensis* Nelson.

*A[ntrostomus] v[ociferus] arizonæ* COUES, Key, 2d ed., 1884, 452.

*A[ntrostomus] vociferus arizonæ* RIDGWAY, Man. N. Am. Birds, 1887, 299.

*Caprimulgus vociferus arizonæ* RIDGWAY, Bull. Nutt. Orn. Club, vii, Oct., 1882, 258.

**ANTROSTOMUS (VOCIFERUS?) CHIAPENSIS Nelson.**

**CHIAPAS WHIPPOORWILL.**

Similar to *A. v. macromystax* but adult male much darker, both above and below, with inner webs of primaries wholly dusky or with only a few very small rufous-tawny spots on inner quills.

*Adult male*.—General color of upper parts brown, vermiculated, barred, and blotched with black and spotted with dull rufous-tawny; pileum brownish gray, finely vermiculated with dusky, narrowly streaked laterally with black and heavily spotted medially with the same, the spots coalescing so as to form a broad median irregular stripe; scapulars with black prevailing, but this broken by bars and spots of light dull rufous-tawny, which on inner webs is paler and broken by coarse vermiculations of blackish; interscapular region and upper rump dusky, indistinctly barred and freckled with light tawny-brown, the lower rump and upper tail-coverts similar in color but the light tawny-brown markings larger, more spotlike; middle pair of rectrices light tawny-brown shaded with brownish gray, coarsely and irregularly vermiculated with dusky and crossed by irregular, very broken, V-shaped bars of brownish black; next pair of rectrices brownish black broken by small mottlings of light tawny-brown, segregated into spotlike areas; three outer pairs of rectrices extensively white distally (the white area diminishing in extent, from about 47 mm. on the third to about 34 mm. on inner web of the outermost), the remaining portion brownish black,<sup>a</sup> broken (except toward the white) by indications of bars of segregated light tawny-brown mottlings; lesser wing-coverts brownish black, barred with light tawny-brown; middle and greater coverts blackish, spotted with ochraceous-buff, some of the spots broken by dusky vermiculations; primaries and primary coverts brownish black, spotted on outer web with tawny-ochraceous, the terminal portion nearly uniform grayish dusky; loral region ochraceous-buff, slightly mottled with dusky; auricular and suborbital regions nearly uniform blackish brown; chin and throat rather broadly barred with brownish black and ochraceous-buff, the latter becoming paler buff (and the bars wider) on sides of throat; a narrow band of white, tinged or suffused with buff, across lower throat; rest of under parts dull buff, broken by coarse spotting and barring of blackish brown on chest and breast, and by regular bars of the same on abdomen and flanks, the under

<sup>a</sup> On the outermost rectrix the white tip is confined on outer web to a cuneate space about 20 mm. long, measured along the shaft.



tail-coverts nearly immaculate; under wing-coverts blackish brown or dusky transversely spotted with dull ochraceous, especially toward edge of wing; inner webs of primaries uniform blackish brown, in the closed wing, but with a few small concealed spots of ochraceous or ochraceous-buff; bill blackish brown, darker terminally; feet blackish brown, the tarsi paler; length (skins), 241–245 (243); wing, 166.5–167.5 (167); tail, 122.5–135 (128.7); exposed culmen, 14.5–16 (15.2); tarsus, 17–18 (17.5); middle toe, 16.5–17 (16.7).<sup>a</sup>

*Adult female.*<sup>b</sup>—Much paler and more grayish than the adult male, and closely resembling the adult female of *A. v. macromystax*, from which the chief difference consists in the greatly reduced size of the tawny-ochraceous spots or bars on inner webs of primaries, slightly darker general tone of coloration of upper parts (especially the middle rectrices), and paler buff of collar across lower throat, length (skins), 232–243 (237.5); wing, 159–162 (160.5); tail, 113.5–123 (118.2); exposed culmen, 14–15.5 (14.7); tarsus, 17.5–18 (17.7); middle toe, 17–17.5 (17.2).<sup>a</sup>

*Young.*—Apparently distinguishable from the young of *A. v. macromystax* only by the absence of distinct transverse spots on inner webs of primaries.

Extreme southern Mexico, in State of Chiapas (Valley of Comitán; Ocozucuantla; Teopisca) and Guatemala (Lake Atitlán; Tecpám).

(?) *Antrostomus* ———? OWEN, Ibis, 1861, 64 (Santa Barbara, Vera Paz, Guatemala; descr. eggs).

(?) [*Caprimulgus vociferus*] subsp. *α. Caprimulgus macromystax* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 570, part (Coban, Santa Barbara, and Volcan de Fuego, Guatemala).

*Antrostomus chiapensis* NELSON, Auk, xvii, July, 1900, 261 (Valley of Comitán, Chiapas; coll. U. S. Nat. Mus.).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 94 (Lake Atitlán and Tecpam, Guatemala, above 5,000 feet).

### ANTROSTOMUS OAXACÆ Nelson.

#### OAXACA WHIPPOORWILL.

Very similar to *A. vociferus macromystax*, but slightly darker above, with black spots on pileum smaller, more triangular, with less light mottling on scapulars, and breast spotted instead of vermiculated.

*Adult female.*<sup>c</sup>—Pileum brownish gray, minutely and indistinctly freckled and vermiculated with darker, each feather (except on lateral portions) with a terminal spot of black, these spots regularly triangular on forehead and crown, more elongated and irregular on

<sup>a</sup> Two specimens.

<sup>b</sup> Perhaps of this species, but possibly another form. If really the same, I know of no other instance of such marked sexual difference in coloration among birds of this family.

<sup>c</sup> The adult male is as yet unknown.

occiput, and all margined laterally with tawny or light russet; sides of pileum with a few narrow streaks of black, the hindneck with broader streaks; back coarsely vermiculated with light russet-brown and dusky and with rather broad, irregular, streaks of black, the rump and upper tail-coverts similar but with the general color rather lighter and more grayish; scapulars with middle portion light buff with a few coarse and irregular bars and finer vermiculations of grayish dusky, the tip irregularly spotted with black and buff, and with a very large, irregular, subterminal spot or blotch of black; wing-coverts irregularly marbled, barred and vermiculated with dull ochraceous-buff or cinnamon-buff and dusky, and with irregular central mesial or subterminal markings of black, some of the middle coverts with a terminal spot of ochraceous-buff; inner secondaries ("tertials") vermiculated and marbled with deep brownish gray and pale cinnamon-buff, and with irregular mesial streaks of black; remaining secondaries dark sooty brown with broken spots or mottlings of dull ochraceous-buff, disposed in transverse series; primaries darker sooty brown or dull brownish black, their outer webs with large spots of dull ochraceous-buff, their terminal portion (especially of inner quills) more grayish dusky mottled and vermiculated with pale grayish buffy; primary coverts dull brownish black, their outer webs spotted, their inner webs narrowly and irregularly barred, with dull ochraceous-buff; four middle rectrices light grayish brown slightly intermixed with dull grayish buffy, irregularly vermiculated and marbled with dusky, and with indistinct, broken, transverse bands of dull black, these more distinct on distal portion; three outer rectrices (on each side) dull brownish black, irregularly barred and spotted with light ochraceous-buff (especially on proximal portion) and tipped with ochraceous-buff, these buffy tips about 8-10 mm. in width; loreal, orbital, and auricular regions dull tawny-ochraceous, narrowly and indistinctly barred with dusky; malar region (except anterior portion), chin, and upper throat dull brownish black, narrowly barred with light buffy brown or cinnamon, the anterior portion of malar region ochraceous-buff, broken by a few narrow bars of brownish black and terminal spots of buffy white; a rather broad band of ochraceous-buff across lower throat or upper foreneck, extending laterally to the sides of neck (behind auriculars), some of the feathers with a small, broadly triangular, terminal spot of black; chest dull brownish black transversely spotted with pale dull buff and deeper cinnamon-buff, the buffy spots broken by irregular small lines and spots of blackish; breast similar but with a few large irregular broken spots of dull buffy white; rest of under parts dull buff, the sides, flanks, and abdomen rather coarsely and irregularly barred with brownish black, some of the feathers with a distinct terminal spot of pale buff or dull buffy white; under tail-coverts with a few irregular

markings (mostly of transverse tendency), especially on distal portion of the longest coverts; under wing-coverts mostly plain dull ochraceous-buff or cinnamon-buff, those toward margin of wing broadly and irregularly barred with dusky; inner web of primaries dark sooty brown or dusky, with rather small transverse spots of ochraceous-buff, these not reaching nearly to shaft, and becoming obsolete on distal portion; bill deep brownish, dusky terminally; legs and feet brownish (in dried skin); length (skin), 235; wing, 162; tail, 118; exposed culmen, 13; tarsus, 17.5; middle toe, 17.5.<sup>a</sup>

Southern Mexico, in State of Oaxaca (Oaxaca City).

(?) *Antrostomus macromystax*? (not *Caprimulgus macromystax* Wagler?) SCLATER, Proc. Zool. Soc. Lond., 1858, 296 (La Parada, Oaxaca; crit.).

(?) [*Caprimulgus vociferus*.] Subsp.  $\alpha$ . *Caprimulgus macromystax* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 570, part (Oaxaca).

*Antrostomus oaxacæ* NELSON, Auk, xvii, July, 1900, 260 (near city of Oaxaca, Oaxaca; coll. U. S. Nat. Mus.).

### ANTROSTOMUS SALVINI (Hartert).

#### SALVIN'S WHIPPOORWILL.

Similar to *A. cubanensis* but smaller (wing not more than 175 mm.) with a broken collar of tawny or tawny-buff across lower hindneck, and only three outer pairs of rectrices tipped with white (in male) or buffy (in female), this decreasing rapidly in extent from the outer to the third rectrix, and with a strongly oblique anterior outline.

*Adult male*.—Pileum deep grayish brown intermixed with pale brownish gray, densely vermiculated and freckled with dusky, and streaked with black, the black streaks much broader along the median line, where assuming more or less the form of cuneate or guttate spots; hindneck similar but more grayish and with narrower black streaks, the lower portion ochraceous or brownish buff spotted or otherwise marked with black, forming an indistinct collar; back, rump, and upper tail-coverts grayish brown, vermiculated with dusky and buffy and with serrated streaks of black; scapulars with a large, irregular subterminal spot or blotch of black, anterior to which both webs, especially the inner, are mostly dull buffy whitish coarsely and rather sparsely vermiculated with dusky, the terminal portion light tawny irregularly marked with black; lesser wing-coverts sooty blackish broken by small spots and bars of brownish buffy or dull tawny; middle and greater coverts grayish brown or brownish gray vermiculated with dusky and with a broad median, irregularly cuneate, space of dusky, many of the feathers with a terminal spot of buffy or pale tawny, inclosing a small central spot of dusky; inner secondaries ("tertials") pale brownish gray vermiculated with dusky and with an irregular median streak of black, their inner webs

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<sup>a</sup> One specimen (the type).



usually suffused with buff, especially toward edge; remaining secondaries dark sooty brown with about four transverse series (beyond tips of greater coverts) of ochraceous-buff spots, more or less broken by a few small irregular dusky markings, and narrowly tipped with buffy whitish; primaries dull brownish black, spotted on outer webs with ochraceous-buff (these spots on inner or proximal primaries broken by small irregular spots of blackish), their terminal portion, especially on inner webs, mostly grayish dusky broken by rather sparse irregular vermiculations of light brownish buffy; middle pair of rectrices mottled or coarsely vermiculated dusky and pale dull ochraceous-buff, and with much heavier marblings of brownish black having a tendency toward forming very irregular transverse bands; next pair similar but with relatively more blackish and with the transverse tendency of the markings more pronounced; third pair still darker, passing into uniform sooty blackish distally and narrowly tipped with dull white; fourth and fifth pairs similar but with the white tips successively much broader, that on the outermost rectrix about 20 mm. wide along shaft, the anterior outline of these white terminal areas strongly oblique, touching edge of outer web far anterior to the point where it crosses the shaft; auricular region deep brown (prouts brown) indistinctly barred with dusky; chin tawny-buff or dull ochraceous-buff, sparsely barred with black; malar region and throat brownish black, broken by a few bars and transverse spots of ochraceous-buff, the feathers of lower portion tipped with pale buff or buffy white, these tips becoming much broader on extreme lower throat where forming a conspicuous transverse band or collar; chest sooty black, coarsely but rather sparsely vermiculated with buffy; rest of underparts similar but with large, irregularly roundish, subcordate, or subtriangular spots of dull white, especially on breast, abdomen, and flanks; under tail-coverts buff, with rather narrow and distinct regular bars of dusky; under wing-coverts sooty blackish, transversely spotted with dull tawny or tawny-ochraceous, especially toward edge of wing; inner webs of primaries nearly uniform dark grayish sooty brown, but this slightly broken by a few small irregular spots or bars of dull tawny-ochraceous; bill brownish, blackish at tip; iris dark brown; legs and feet light brownish, the toes darker; length (skins), 244-256 (250); wing, 166.5-178.5 (172.6); tail, 124-139 (130.5); exposed culmen, 13.5-15.5 (14.4); tarsus, 15-16 (15.7); middle toe, 15-16 (15.6).<sup>a</sup>

*Adult female*.—Similar to the adult male but terminal areas of lateral rectrices much narrower and dull buff or pale clay color instead of white; length (skins), 237-248 (243); wing, 164-172.5 (169.3); tail, 116.5-128.5 (123.5); exposed culmen, 13.5-15 (14.2); tarsus, 15-16.5 (15.9); middle toe, 14.5-16 (16.8).<sup>b</sup>

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<sup>a</sup> Seven specimens.<sup>b</sup> Six specimens.

Eastern Mexico, in States of Nuevo León, Tamaulipas (Victoria; Rio de la Cruz; Santa Leonora), Vera Cruz (Miradór), and Yucatan (Mérida, winter).

*Antrostomus macromystax* (not *Caprimulgus macromystax* Wagler) BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 409 (Mirador, Vera Cruz).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 451 (Merida, Yucatan).

*A[ntrostomus] macromystax* RIDGWAY, Man. N. Am. Birds, 1887, 298.

*[Antrostomus macromystax]* var. *macromystax* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 409 (diagnosis).

*Caprimulgus salvini* HARTERT, Ibis, sixth ser., iv, April, 1892, 287, in text (Mirador, Vera Cruz; based explicitly and exclusively on *Antrostomus macromystax* Baird, Brewer, and Ridgway, Hist. N. Am. Birds, ii, 1874, 409); Cat. Birds Brit. Mus., xvi, 1892, 568 (Nuevo Leon; Merida, Yucatan.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 387, pl. 58b (Nuevo Leon; Merida, Yucatan).

*C[aprimulgus] salvini* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 43.

*[Caprimulgus] salvini* SHARPE, Hand-list, ii, 1900, 85.

*A[ntrostomus] salvini* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 298.

*Antrostomus notabilis* NELSON,<sup>a</sup> Proc. Biol. Soc. Wash., xviii, March 31, 1905, 111 (Victoria, Tamaulipas; coll. Am. Mus. Nat. Hist.).—PHILLIPS, Auk, xxviii, 1911, 77 (Santa Leonora and Rio de la Cruz, Tamaulipas).

### ANTROSTOMUS NELSONI Ridgway.

#### NELSON'S WHIPPOORWILL.

Closely resembling *A. salvini* in size and general coloration, but three lateral rectrices much more extensively tipped with white (the white on outermost 58 mm. instead of only about 22 mm. long on inner web) and the white area longer on inner web than on outer, instead of the reverse; scapulars and sides of pileum conspicuously intermixed with pale gray; tawny-ochraceous collar across hindneck broader, uninterrupted, very conspicuous; under tail-coverts immaculate.

<sup>a</sup> It is almost inconceivable that either Dr. Hartert or the authors of the "Biologia" could have confounded two such very different birds as the present species and the one which I have named *A. nelsoni* (p. 527); furthermore, on reading carefully the description of the specimen from Yucatan in the "Biologia" and examining with equal care the colored plate in the same work (the latter being very inaccurate in some respects for either species), I find nothing inconsistent with the characters of the present bird; in fact one that is mentioned, the barred under tail-coverts, applies only to *A. salvini*. Consequently I believe that Mr. Nelson erred in concluding that the bird described and figured in the "Biologia" was different from the Vera Cruz, Tamaulipas, and Nuevo Leon species. Whatever the bird from Yucatan may be, however, has really nothing to do with the nomenclatural aspects of the case, since Dr. Hartert based the name *C. salvini* explicitly and exclusively on the *Antrostomus macromystax* of Baird, Brewer, and Ridgway (in fact did not even mention any other specimens), and hence the bird from Mirador, Vera Cruz, erroneously described as *A. macromystax* is clearly the type of *C. salvini*. Even if Dr. Hartert had subsequently selected some other specimen as type, which I can find no evidence of his having done, he had no right, under the rules of nomenclature, to do so.

*Adult male*.—Pileum pale brownish gray, vermiculated and streaked with black laterally and posteriorly, the central portion (extensively) heavily spotted with brownish black; across hindneck a very conspicuous broad, uninterrupted band or collar of ochraceous, which encircles the sides of neck and foreneck also, but broken by brownish black spots and bars; back and rump coarsely vermiculated with dusky and streaked with brownish black on a pale brownish gray and pale buffy brown ground, the upper tail-coverts similar but with coarser or heavier markings; scapular region light buffy brown laterally, very pale brownish gray or dull grayish white medially, coarsely vermiculated with dusky, the two brownish areas with large, irregular spots or blotches of black; wing-coverts pale brown coarsely vermiculated with dusky, and with central or mesial irregular spots and jagged streaks of black, some of the middle coverts with irregular broken spots of dull whitish; inner secondaries ("tertials") mottled and coarsely vermiculated with grayish dusky on a grayish white and pale buffy brownish ground, and with rather broad irregular mesial streaks of black; remaining secondaries dark grayish brown with broken transverse spots or bars of dull ochraceous-buff; primaries and primary coverts dull brownish black or dark sooty brown, spotted with ochraceous-buff, the former with terminal portion more grayish brown and with irregular markings of pale grayish brown and dull ochraceous-buff, disposed in transverse broken bands; middle pair of rectrices mottled light grayish brown and pale grayish buffy, irregularly marbled and coarsely vermiculated with dusky and with very irregular spots of dark sooty brown or brownish black alongshaft, these showing a tendency to form broken bars, in "herring-bone" pattern; second pair dark sooty brown or dull brownish black with irregular broken spots of light ochraceous-buff and light grayish brown, disposed in transverse series; third pair similar, but mostly plain dark sooty brown, and with a terminal area of white (passing into ochraceous-buff at tip) measuring, along shaft, about 22 mm. on inner web and 27 mm. on outer web; fourth pair similar but with the white terminal area much larger (measuring about 49 mm. along shaft); fifth (outer) pair with the white terminal area 58 mm. long on inner web and 53 mm. on outer web; loreal region mixed black and tawny-ochraceous; suborbital region and posterior portion of malar region black with a few scattered spots of ochraceous-buff; auricular region mixed black and light brown anteriorly, light tawny or dull ochraceous-buff streaked with blackish posteriorly; anterior portion of malar region mostly white and buff; chin and throat brownish black, barred or transversely spotted with dull buff, the lower throat (superficially) buffy white, the feathers tipped with a sharply defined black bar; chest and breast, posterior to the broken ochraceous-buff band across lower foreneck or upper chest, brownish black, the former



with tips of feathers pale buff and buffy white vermiculated with black, the latter with large, irregular terminal spots of pale buff and white, these broken, more or less, by irregular spots and zigzag lines of blackish; lower breast and upper abdomen brownish black irregularly and narrowly barred with dull ochraceous-buff or tawny-ochraceous; sides and flanks (superficially) dull white or buffy white, irregularly marbled or barred with blackish, the lower abdomen ochraceous-buff indistinctly barred with dusky; under tail-coverts immaculate ochraceous-buff; under wing-coverts dull ochraceous-buff with a central (mostly concealed) area of grayish dusky, those along margin of wing dusky, broadly tipped with ochraceous-buff; inner webs of primaries dusky with very narrow irregular bars of dull ochraceous-buff, these, on the outermost quills, not touching shaft; bill dusky; legs and feet dark brownish (in dried skins); length (skin), 248; wing, 177; tail, 128; exposed culmen, 13.5; tarsus, 17.5; middle toe, 17.<sup>a</sup>

Yucatan (Chichen-Itza).

*Antrostomus salvini* (not *Caprimulgus salvini* Hartert) NELSON, Proc. Biol. Soc. Wash., xviii, 1905, 112, in text (Chichen-Itza, Yucatan; measurements; crit.<sup>b</sup>).—COLE, Bull. Mus. Comp. Zool., 1, 1906, 127 (Chichen-Itza).

*Antrostomus nelsoni* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 90 (Chichen-Itza, Yucatan; coll. Mus. Comp. Zool.).

#### ANTROSTOMUS BADIUS Bangs and Peck.

##### PECK'S WHIPPOORWILL.

Resembling *A. nelsoni* in having a conspicuous collar of tawny-ochraceous, and in general pattern of coloration, but much more rufescent, the general "tone" of coloration much like that of *A. rufus*.

*Adult female?*<sup>c</sup>—Pileum and nape light russet, becoming paler and mixed with grayish white and pale buff laterally, vermiculated with dusky, and marked with large irregular longitudinal spots of black, which become smaller or narrower on lateral portion, where some of them assume the form of narrow streaks; across the hindneck a conspicuous band or collar of tawny-ochraceous, the lateral portions of this with a few spots or bars of black; back and rump light russet-brown, rather coarsely vermiculated with dusky and irregularly streaked with black, the upper tail-coverts paler and coarsely and irregularly barred with black; scapular area light russet laterally, pale buffy medially, marbled or coarsely vermiculated with dusky, the feathers with a large terminal irregularly serrate spot or blotch of black; lesser wing-coverts bright russet irregularly barred or trans-

<sup>a</sup> One specimen (the type).

<sup>b</sup> See footnote on p. 527.

<sup>c</sup> The type (and only known specimen) was sexed by the collector as male, and was so considered by the describers; but it is almost certainly a female.

versely spotted with black; middle and greater coverts paler (russet-buff or buffy russet), vermiculated with dusky and with irregular spots, variable in size, of black, some of the middle coverts with an irregular terminal spot of buffy, some of the greater coverts with a large terminal spot of ochraceous-buff; inner secondaries ("tertials") buffy or pale russet-buff, vermiculated with dusky, irregularly streaked mesially with black, and with a terminal spot of buffy white to light ochraceous-buff; other secondaries dark grayish brown, marbled distally with light russet and with irregular marblings of the same, disposed in about three transverse series, on remaining portion; primaries brownish black fading into dusky grayish brown terminally, their outer webs with large irregular spots of tawny, the more grayish exposed terminal portion of inner webs with narrow irregular marblings of duller tawny or light russet; primary coverts dark grayish brown or sooty, spotted with light russet or dull tawny; middle pair of rectrices light grayish brown irregularly vermiculated or finely marbled with dusky and with a median series of alternating very irregular blotches of black and pale russet or cinnamon-buff; next pair mostly dull blackish, with large, irregular, much broken spots of pale russet and cinnamon-buff, these disposed as indications of transverse bands; third pair still darker, through greater predominance of the dull blackish color and restriction of the pale russet markings, and with an irregular terminal spot of cinnamon-buff; fourth and fifth pairs similar but with the pale russet or russet-buff spots better defined (less broken), especially on outer web, and broadly tipped (for about 10-12 mm.) with plain ochraceous-buff; loreal and suborbital regions bright russet or light chestnut, indistinctly flecked with dusky, the auricular region similar but rather lighter (especially on terminal and lower portions) and very indistinctly streaked; a large patch of sooty black covering posterior half of malar region (this slightly broken by a few small flecks of light russet), the anterior portion of the malar region mostly buff or pale ochraceous-buff; chin and throat rather broadly and sharply barred with black and tawny-ochraceous; across the foreneck a band of buff immediately succeeded by a broader one of ochraceous-buff or light tawny-ochraceous, the feathers more or less broadly tipped with black; chest ochraceous-buff or light tawny-ochraceous, narrowly barred with black, the feathers of lower portion with a very large terminal spot of paler ochraceous-buff to buffy-white margined with black; breast rather broadly barred with black and tawny or tawny-ochraceous; sides, flanks, and abdomen buff irregularly barred with blackish and nearly covered (superficially) by very large spots of pale buff; under tail-coverts buff with a few narrow irregular bars of dusky grayish; under wing-coverts dull ochraceous-buff or clay color, those toward edge of wing broadly barred with dusky; inner webs of primaries dusky, with irregular, mostly broken, narrow bars of pale russet, except on

terminal and basal portions; bill dusky brown, darker terminally; feet dusky brownish (in dried skins); length (skin), 240; wing, 167; tail, 122.5; exposed culmen, 15.5; tarsus, 15; middle toe, 16.<sup>a</sup>

British Honduras (Toledo District.)

*Antrostomus badius* BANGS, Proc. Biol. Soc. Wash., xxi, Feb. 29, 1908, 44 (Toledo District, British Honduras; coll. E. A. and O. Bangs).

### ANTROSTOMUS RIDGWAYI Nelson.

#### GUERRERO WHIPPOORWILL.

*Adult male*.—General color of upper parts brownish gray, interrupted by a conspicuous collar of deep buff or ochraceous-buff across lower hindneck; pileum minutely and indistinctly vermiculated with darker, and with mesial streaks of black, these very narrow (mere shaft-lines) on lateral portions but broader along median line, especially on crown; back, scapulars, and rump brownish gray, rather coarsely vermiculated and freckled with pale dull buffy and with distinct narrow black mesial streaks, the scapulars, however, with more conspicuous black markings, some of them edged externally by a curved bar of clear light buff, outside of which is an area of pale grayish and buffy vermiculated or zigzagged with dusky; wing-coverts brownish-gray and pale buffy, vermiculated with dusky and with mesial streaks of black, many of the coverts (chiefly those near bend of wing) with a transverse terminal spot of light buff and a subterminal spot or bar of black; inner secondaries ("tertials") mottled and vermiculated with deep brownish gray or dusky and pale grayish buffy, and with irregular mesial streaks of blackish; remaining secondaries dusky with broken spots of buff or ochraceous-buff in transverse series; primaries dull slate-blackish spotted with deep buff or ochraceous-buff, their terminal portion pale buffy grayish vermiculated and clouded with grayish dusky; upper tail-coverts brownish gray and pale grayish buffy vermiculated and mottled with dusky and with an irregular mesial streak or ragged area of black; middle pair of rectrices pale brownish gray and grayish buffy, vermiculated, freckled, and zigzagged with dusky, and crossed by broad V-shaped bands of deeper grayish brown blotched with dull black; next two pairs similar but the darker bars nearly solid dull black, especially the third, which is tipped with buffy; fourth and fifth (two outermost) rectrices with the blackish bars relatively broader and with the terminal 35 mm. of inner web white margined terminally with pale brownish buff, the fourth rectrix with the white encroaching over more than inner half of outer web, but of very broken or irregular outline; auricular region deep sooty brown, minutely and indistinctly vermiculated or narrowly barred with dusky, the malar region similar, but on the anterior and lower portions transversely spotted or broadly barred with white; chin and

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<sup>a</sup> One specimen (the type).



throat deep brownish gray or grayish brown, narrowly and rather indistinctly barred with paler; extreme lower throat buffy white, some of the feathers narrowly tipped with black, immediately succeeded by a rather broad band of buff across foreneck; chest sooty black, but exposed portion of feathers mostly pale grayish and buffy vermiculated and mesially streaked with dusky, the feathers of lower portion with terminal transverse spots of dull buffy whitish; rest of under parts light buff, rather broadly barred with dusky, the under tail-coverts with the dusky bars more distant and broader; under wing-coverts rather dull pinkish buff, barred along edge of wing with dusky; inner webs of primaries dusky, with large transverse spots of ochraceous-buff or deep pinkish buff; bill brown, darker terminally; iris dark brown; legs and feet deep brown, paler on upper portion of tarsi; length (skin), 210; wing, 161; tail, 115.5; exposed culmen, 15.5; tarsus, 17; middle toe, 18.<sup>a</sup>

*Adult female*.—Similar to the adult male, but three outer rectrices (on each side) tipped, on both webs, with dull buff or pale ochraceous-buff, freckled, in part, with dusky, this buffy terminal area not more than about 10 mm. wide; length (skins), 232; wing, 155; tail, 116; exposed culmen, 14.5; tarsus, 15; middle toe, 16.5.<sup>b</sup>

Southwestern Mexico, in States of Guerrero (Tlalkisala), and Sinaloa (Los Pielas).

*Antrostomus ridgwayi* NELSON, Auk, xiv, Jan., 1897, 50 (Tlalkisala, Guerrero, s. w. Mexico; coll. U. S. Nat. Mus.).—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxi, 1905, 353 (Los Pielas, s. Sinaloa).

[*Caprimulgus*] *ridgwayi* SHARPE, Hand-list, ii, 1900, 84.

#### ANTROSTOMUS GOLDMANI Nelson.

##### GOLDMAN'S WHIPPOORWILL.

Similar to *A. ridgwayi* but decidedly larger and much paler.

*Adult female*.—General color of upper parts pale brownish gray, minutely vermiculated and stippled with darker, interrupted by a collar of buff across hindneck; pileum ecru-drab, narrowly streaked with black, these streaks mere shaft-lines except those on median portion of crown, occiput, and nape, which are broader, some of them with irregular edges; sides of nape or upper hindneck grayish white, sparsely vermiculated with dusky and with rather broad, sharply defined, lanceolate streaks of black; lower hindneck buff, forming a conspicuous collar, apparently confluent laterally with a broad buff band across upper chest; back, rump, and upper tail-coverts light brownish gray or grayish brown, narrowly streaked with black,

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<sup>a</sup> One specimen.

<sup>b</sup> One specimen (the type).

and vermiculated with dusky grayish, the streaks broader on upper tail-coverts; middle pair of rectrices mixed pale grayish brown and brownish gray, confusedly vermiculated with dusky and with occasional very irregularly zigzag more pronounced transverse markings of the same; next pair similar but with the darker markings heavier; third pair with darker markings still heavier, disposed as large, irregular median blotches alternating with transverse areas of pinkish buff, these nearly unbroken proximally but distally suffused with light brownish gray broken by irregular markings of dusky, the tip (for about 8 mm.) cream-buff minutely dashed or freckled with dusky except on terminal margin, which is pale buff or buffy whitish; fourth pair with black areas relatively broader and together with the paler (mostly cinnamon-buff or deep cream-buff) interspaces, forming distinct transverse bands, much broken, however, along edges and on distal portion, the tip (for about 10 mm.) pale pinkish buff or cream-buff; fifth (outermost) pair similar to fourth, but buffy tip slightly narrower; loreal region light buffy brownish, narrowly and indistinctly barred with dusky, the orbital, auricular, and posterior malar regions similar but darker; anterior portion of malar region spotted with dull white; chin and throat pale grayish brown or buffy gray, very narrowly and indistinctly barred with dusky anteriorly, more distinctly barred posteriorly; lower throat or upper foreneck crossed by a rather broad bar of pale buff, the feathers of upper portion rather broadly barred with brownish black; immediately below this a rather broader band of ochraceous-buff, sparsely barred with brownish black, confluent or nearly so, laterally with the collar across lower hindneck; chest and breast pale grayish brown and dull buffy whitish, vermiculated with darker grayish brown and with shaft streaks of brownish black; abdomen, sides, and flanks pale buff irregularly barred with dusky, the under tail-coverts similar but with the dusky bars more sparse, mostly on distal portions of the longer coverts; under wing-coverts light ochraceous-buff, more or less spotted (transversely) with dusky, especially toward edge of wing; inner webs of primaries dusky with large transverse spots or bands of ochraceous-buff, interrupted along shafts and on distal portion broken by brownish gray mottlings; bill deep brownish, darker terminally; legs and feet deep brownish (in dried skin); length (skin), 248; wing, 162; tail, 121; exposed culmen, 14; tarsus, 17; middle toe, 18.5.<sup>a</sup>

Western Mexico, in State of Sinaloa (near Mazatlán).

*Antrostomus goldmani* NELSON, Proc. Biol. Soc. Wash., xiii, May 29, 1899, 26 (near Mazatlan, Sinaloa, w. Mexico; coll. U. S. Nat. Mus.).

[*Caprimulgus*] *goldmani* SHARPE, Hand-list, ii, 1900, 84.

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<sup>a</sup> One specimen (the type.)

## ANTROSTOMUS SATURATUS Salvin.

## DUSKY WHIPPOORWILL.

*Adult male*.—General color sooty black, but this much broken by rather small spots (mostly transverse) of cinnamon-rufous, the pileum, however, with several broad, irregularly serrated stripes of uniform black, and, sometimes, with an admixture of whitish, barred with black, on lateral portion, the scapulars with the black disposed in the form of large, irregular spots or blotches, these sometimes more strongly relieved by adjoining mottlings of pale rusty buff; outer webs of primaries with rather small but distinct spots of cinnamon-rufous; four middle rectrices sooty black with about ten broad  $\Lambda$ -shaped bars of cinnamon-rufous, averaging decidedly narrower than the black interspaces (except on middle pair) and themselves more or less broken by irregular small blotches of black; three outermost rectrices (on each side) broadly tipped with white, the cinnamon-rufous bars much narrower, less broken, more directly transverse, and becoming obsolete on distal portion, the white tips about 20–25 mm. wide (measured along shaft) on the third and fourth (from middle) but narrower on the fifth (outermost), on which the white is of less extent on the outer web than on the inner; sides of head and neck and general color of under parts sooty black, each feather with a terminal pair of small cinnamon-rufous roundish or transversely oval spots, these larger, and in form of V-shaped bars, on lower throat, but not forming a distinct patch or band; middle of breast with several larger spots of dull buffy whitish, the posterior under parts with broad bars of dull ochraceous-buff (broadest on under tail-coverts), the flanks, or posterior sides, and abdomen crossed by a broken band of large spots of buff or buffy whitish; under wing-coverts sooty black, indistinctly spotted on outer margin of wing with dark rusty; inner webs of primaries uniform dark sooty slate color; bill dull black; iris dark brown; feet dusky, the tarsi becoming paler (dull flesh color in life) on upper and posterior portions; length (skins), 212–230 (221); wing, 153–158.5 (155.6); tail, 115–122 (117.7); exposed culmen, 12.5–13.5 (13); tarsus, 14–16 (15.2); middle toe, 15–15.5 (15.2).<sup>a</sup>

*Adult female*.—Similar to the adult male but the general “tone” of coloration rather lighter, owing to the somewhat greater relative size of the cinnamon-rufous markings and their lighter color, especially on upper parts, and with the three outer rectrices (on each side) more narrowly tipped with light ochraceous-buff, instead of white; length (skins), 220–230 (224); wing, 153–159 (156); tail, 117–120.5 (119.2); exposed culmen, 11–12.5 (11.8); tarsus, 15.5–16.5 (16); middle toe, 15.5–16 (15.8).<sup>b</sup>

<sup>a</sup> Four specimens.<sup>b</sup> Three specimens.



*Young female*.—Above deep cinnamon-rufous, the scapulars and larger wing-coverts paler cinnamon-rufous; pileum and nape spotted with black, the spots of variable form; hindneck barred with blackish; back with large black spots; lesser wing-coverts spotted and barred with black, the larger coverts and secondaries sparsely barred with black, the latter with a large subterminal spot of black; rump and upper tail-coverts indistinctly barred with grayish black or dusky and with a series of transverse, more or less diamond-shaped, spots of black along median line; primaries and rectrices as in adult female; sides of head nearly uniform deep cinnamon-rufous; under parts cinnamon-rufous for anterior half, passing into pinkish buff on posterior half, everywhere barred with dull black or dusky, the dusky bars much less distinct and farther apart on the buffy posterior portions; lower throat rather broadly barred with dull pinkish buff or pale ochraceous-buff.

High mountains of Costa Rica (Volcán de Irazú; Volcán de Turrialba; La Estrella de Cartago; Escazú) and western Panamá (Volcán de Chiriquí).

*Antrostomus saturatus* SALVIN, Proc. Zool. Soc. Lond., Nov., 1870, 203 (Volcan de Chiriqui, Panama; coll. Salvin and Godman).—RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 614 (Volcan de Irazu, Costa Rica; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1890, 504 (Volcan de Irazu, Volcan de Turrialba, La Estrella de Cartago, and Escazu, Costa Rica; descr. adult and young females).

*Caprimulgus saturatus* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 572 (Volcan de Chiriqui).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 388, pl. 58.

*[Caprimulgus] saturatus* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 42.

*[Caprimulgus] saturatus* SHARPE, Hand-list, ii, 1900, 84.

*Antrostomus rufomaculatus* RIDGWAY, Proc. U. S. Nat. Mus., xiv, no. 867, Oct. 12, 1891, 465 (Volcan de Irazu, Costa Rica; coll. U. S. Nat. Mus.).

#### Genus NYCTIDROMUS Gould.

*Nyctidromus* GOULD, Icones Avium, ii, 1838, pl. 2. (Type, *N. derbyanus* Gould.)

*Eucapripodus* LESSON, L'Écho du Monde Savant, 10<sup>e</sup> an., ser. 2, viii, no. 5, July 16, 1843, col. 109. (Type, *E. rutilus* LESSON = *Caprimulgus albicollis* Gmelin.)

*Lucapripodus* (typographical error?) LESSON, Compl. Œuvres de Buffon (Lévéque), xx, 1847, 259; Descr. Mam. et Ois., 1847, 259.

Medium-sized Caprimulginae (length about 225–305 mm.), with the completely naked tarsus longer than middle toe without claw, tail nearly as long as wing and much rounded, tenth primary much shorter than seventh, and primaries unspotted but with a white patch on median portion.

Bill rather broadly triangular in vertical profile, its length from frontal feathers very slightly exceeding its width at same point. Nostril small, roundish, opening laterally in anterior end of the slightly inflated nasal fossa. Rictal bristles rather large, but scarcely

twice as long as bill. Wing rather long, the distance from tip of longest primary coverts to tip of longest primaries more than half the length of wing; eighth primary longest, the ninth and seventh, successively, slightly (but decidedly) shorter, the tenth much shorter than seventh; sixth to ninth primaries, inclusive, with outer webs distinctly sinuated. Tail more than six-sevenths as long as wing, much rounded, the outer rectrices about four-fifths as long as middle pair, the rectrices relatively rather narrow, not widening terminally. Tarsus decidedly longer than middle toe without claw (but shorter than middle toe with claw), more than one-seventh as long as wing, naked, only the extreme upper portion in front being feathered; outer toe without claw reaching to about middle of second phalanx of middle toe, very slightly shorter than inner toe; hallux, with claw, about as long as basal phalanx of middle toe.

*Plumage and coloration.*—Plumage of pileum blended, without specially developed feathers on sides of occiput; feathers of chest normal (not forming a distinct flap or apron). Primaries unspotted (except, in some females, on basal portion), but with a broad white band crossing the four or five outer quills; inner webs of three outer rectrices (on each side) mostly white in males, the terminal portion of inner web of third and fourth rectrices white in females.

*Range.*—Mexico (and extreme southern Texas) to southern Brazil, etc. (Monotypic, but the single species comprising five or six more or less strongly characterized geographic subspecies.)

KEY TO THE SPECIES AND SUBSPECIES OF NYCTIDROMUS.<sup>a</sup>

- a. Smaller (wing averaging less than 162 in males, less than 160 in females).
  - b. Darker and smaller; wing averaging 155.2 in male, 153.1 in female; tail averaging 144 in male, 136.3 in female. (Amazon Valley to Guianas and Panama and northward to Chiapas and British Honduras.)
    - Nyctidromus albicollis albicollis* (p. 537).
  - bb. Paler and larger; wing averaging 161.3 in male, 159.4 in female; tail averaging 153.1 in male, 144.8 in female. (Pacific slope of Mexico, from Oaxaca to Sinaloa). ..... *Nyctidromus albicollis nelsoni* (p. 544).
- aa. Larger (wing averaging more than 167 in males, more than 162 in females).
  - b. Wing averaging less than 172 in male, less than 163 in females; tail averaging less than 164 in males, less than 145 in females.

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<sup>a</sup> This "key" is restricted to the forms occurring from Panama northward, the available South American material being too scant to permit of satisfactory treatment, except in the case of the extreme southern form, *N. a. derbyanus*. This occurs from Bahia to extreme southern Brazil, southern Bolivia, etc., and is a very strongly characterized form, nearly as large as the larger Mexican subspecies, but very different in coloration. [*Nyctidromus derbyanus* Gould, *Icones Avium*, ii, 1838, pl. 12 (South Am.; coll. Derby Mus).—*N[yc]tidromus albicollis derbyanus* Hartert, *Kat. Vogelsamml. Mus. Senckenb.*, 1891, 120; *Tierreich*, Podarg., Caprim., Macropt., 1897, 32.—*Nyctidromus albicollis derbyanus* Allen, *Bull. Am. Mus. N. H.*, v, 1893, 124 (Chapada, Mattogrosso, s. w. Brazil; crit.); Hellmayr, *Novit. Zool.*, xv, 1908, 79 (Goyaz, Rio Thesouras, and Rio Aragua, s. Brazil; crit.).]

c. Slightly paler; wing averaging 167.9 in male, 162.7 in female; tail averaging 156.7 in male, 141.8 in female. (Eastern Tabasco, Campeche, Yucatan, and northern British Honduras.)...*Nyctidromus albicollis yucatanensis* (p. 543).

cc. Slightly darker; wing averaging 171 in male, 162.1 in female; tail averaging 163.7 in male, 144.5, in female. (Vera Cruz to Tabasco.)

*Nyctidromus albicollis sumichrasti* (p. 543).

bb. Wing averaging 173 or more in males, more than 168 in females; tail averaging more than 164 in males, more than 150 in females.

c. Wing averaging 173 in male, 170.1 in female; tail averaging 164.9 in male, 154.9 in female; coloration browner. (Tres Marias Islands, western Mexico.)

*Nyctidromus albicollis insularis* (p. 545).

cc. Wing averaging 182.1 in male, 170.1 in female; tail averaging 176.6 in male, 150.4 in female; coloration grayer. (Extreme northeastern Mexico and southern Texas.).....*Nyctidromus albicollis merrilli* (p. 546)

### NYCTIDROMUS ALBICOLLIS ALBICOLLIS (Gmelin).

#### CUIÉJO.<sup>a</sup>

*Gray-brown phase.*

*Adult male.*—Pileum, hindneck, and interscapular region grayish brown, minutely vermiculated with dusky, the median portion streaked with black, the streaks much larger and broader along median line of crown and occiput; inner webs of some scapulars brown or grayish brown, minutely vermiculated with dusky, of others black edged with brown, the outer webs mostly black edged (more or less broadly) with buff, this buff edging passing round tip of some feathers; rump and upper tail-coverts brown or grayish brown, vermiculated with dusky, and with mesial ragged streaks of black; middle pair of rectrices grayish brown, coarsely vermiculated, marbled, or splashed with dusky with larger cloudings or marblings of dull black, these with a tendency toward forming indications of irregular transverse bands; the next pair similar but with the darker markings larger; third and fourth pairs white with basal portion broadly barred with black and buff (or with greater part white) and with more or less of dull black or dusky on distal portion of outer webs, this sometimes nearly absent on third pair, but usually present as a broad edging for terminal fourth (more or less), but on fourth pair occupying full width of outer web for terminal third or more, and continued proximally along edge, sometimes quite to base of the white area; the fifth (outermost) pair mostly brownish black, sometimes wholly so except for a slight mottling of buff along edge of basal portion of inner web;<sup>b</sup> prevalent color of wing-coverts brownish

<sup>a</sup> The Central American vernacular name; pronounced *coo-yā'-ho*, in imitation of the call or song.

<sup>b</sup> The relative proportion of the white and colored areas on the three lateral pairs of rectrices is so variable (possibly according to age) that it is very difficult to give a description that will cover all cases. From a careful examination of abundant material I am satisfied, however, that this variation affects equally all forms of the species.



black, but this much broken by roundish or subtriangular spots of buff (mostly terminal) and small areas of light buffy brown vermiculated with dusky; proximal secondaries (tertials) pale grayish brown or buffy brown, vermiculated with dusky grayish and with an irregular or ragged mesial streak (more or less broad) of dusky or dull blackish; remaining secondaries brownish black, crossed (beyond tips of greater coverts) by four transverse rows of dull ochraceous-buff spots, these usually broken by dusky mottlings; primary coverts uniform brownish black; primaries brownish black, the five outermost crossed obliquely about the middle by a broad band of white interrupted only by the black shaft,<sup>a</sup> the others (proximal primaries) more or less variegated with irregular spots or marblings of dull tawny-ochraceous, though these markings are sometimes nearly obsolete; loral, orbital, and auricular regions bright tawny-brown or russet (the last more buffy posteriorly), narrowly barred or vermiculated, more or less, with dusky; malar region similar, or sometimes with ground color grayish buffy; chin and upper throat barred with buff and brownish black, the middle throat (medially) mostly (sometimes uniformly) brownish black; sides of middle throat and anterior portion of lower throat white, this passing into buff on posterior portion of lower throat; superficial color of chest light tawny brown or buffy brown, minutely vermiculated with dusky and narrowly barred with brownish black, some of the feathers (especially on lower chest) broadly tipped with buff; rest of under parts dull buff or pinkish buff, rather narrowly and regularly barred with brownish black, the bars less distinct on abdomen, and more distant as well as more or less V-shaped on under tail-coverts; bill brown, darker terminally; iris dark brown; tarsi light brown, toes darker; length (skins), 230–290 (257); wing, 147.5–172 (155.2); tail, 137.5–163 (144); exposed culmen, 11.5–14 (12.4); tarsus, 23–27.5 (24.5); middle toe, 16.5–21 (19.7).<sup>b</sup>

*Adult female*.—Similar to the adult male, but white of tail restricted to a terminal area less than 25 mm. in length (sometimes wholly wanting) on third rectrix, and to a terminal area usually less than 40 mm. long but occasionally much longer on inner web, only, of fourth rectrix, the remaining portion of these and greater part of the outermost rectrix conspicuously spotted or barred with ochraceous-buff; band across middle of primaries narrower, mostly (often wholly) ochraceous-buff; primary coverts as well as basal portion of outer primaries frequently more or less spotted with ochraceous-buff, and white throat-band less distinct; length (skins), 222–275 (244);

<sup>a</sup> Sometimes this band is continued over the sixth primary (counting from outside) but reduced in width and mostly mottled or marbled grayish instead of white.

<sup>b</sup> Twenty-eight specimens.

wing, 141-170 (153.1); tail, 112.5-154 (136.3); exposed culmen, 10.5-14 (12); tarsus, 22-25.5 (23.7); middle toe, 17.5-21.5 (19.4).<sup>a</sup>

*Young female (nestling).*—General color of upper parts pale brownish gray, very minutely vermiculated or stippled with darker; pileum and scapulars with scattered roundish and subtriangular small spots of black; interscapular region clouded or blotched with black; under parts light grayish buff, narrowly barred with dusky on chest, more broadly barred with the same on throat, breast, and sides, the abdomen and under tail-coverts immaculate; thighs uniform light fawn color; remiges and rectrices (not fully grown) apparently as in adult female.

*Young female (full grown).*—Primaries and rectrices as in adult female; pileum spotted, instead of streaked, with black, the spots mostly of broadly triangular form; back also heavily spotted, or blotched, instead of streaked, with black; scapulars without buff margins; barring of under parts much less sharply defined, less dark in color; throat band light dull buff, barred with blackish.

*Tawny phase.*

Similar (in all stages) in pattern of coloration to the gray-brown phase, but general coloration of upper parts much more tawny or ochraceous, the general color of the pileum varying from fawn color to mars brown or russet.

<sup>a</sup> Twenty-eight specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Four adult males from s. Texas ( <i>N. a. merrilli</i> ).....	182.1	176.6	11.9	27.7	22
Nine adult males from s. w. Mexico ( <i>N. a. nelsoni</i> ).....	161.3	153.1	12.6	24.7	21.1
Five adult males from Tres Marias Islands ( <i>N. a. insularis</i> ).....	173	164.9	12.7	25.1	19.9
Two adult males from Vera Cruz ( <i>N. a. sumichrasti</i> ).....	170.2	160.7	13.7	27.5	21.7
One adult male from Frontera, Tabasco ( <i>N. a. sumichrasti</i> ).....	172.5	169.5	13	25	20.5
One adult male from Montecristo, Tabasco ( <i>N. a. yucatanensis</i> ).....	164.5	164	14	.....	.....
Two adult males from Campeche ( <i>N. a. yucatanensis</i> ).....	165	162.7	12.5	25	20.5
Seven adult males from Yucatan ( <i>N. a. yucatanensis</i> ).....	169.9	155.2	13.5	26.5	21.8
Two adult males from British Honduras ( <i>N. a. yucatanensis</i> ).....	165	152.5	13.2	24.5	19.7
Two adult males from Chiapas ( <i>N. a. albicollis</i> ).....	153	138	13	25	20
One adult male from s. Honduras ( <i>N. a. albicollis</i> ).....	155.5	147.5	11.5	24	20
Eight adult males from Nicaragua ( <i>N. a. albicollis</i> ).....	158.9	148.1	13	24.4	19.9
Ten adult males from Costa Rica ( <i>N. a. albicollis</i> ).....	159.3	150	13.1	25.1	19.8
Five adult males from Canal Zone, Panama ( <i>N. a. albicollis</i> ).....	150	145.8	11.8	23.2	19.1
One adult male from San Miguel Island, Panama ( <i>N. a. albicollis</i> ).....	155	154	12.5	22.5	18
Seven adult males from Santa Marta, Colombia ( <i>N. a. albicollis</i> ).....	152.2	148.5	12	22.9	19.1
One adult male from Río Cauca, w. Colombia ( <i>N. a. albicollis</i> ).....	150.5	141	.....	22	19
Ten adult males from Venezuela ( <i>N. a. albicollis</i> ).....	147.3	144.7	10.7	21.9	18.5
One adult male from n. w. Ecuador ( <i>N. a. albicollis</i> ).....	145.5	136	12.5	20.5	18
Two adult males from Diamantina, Lower Amazon ( <i>N. a. albicollis</i> ).....	151.7	146	11	21.7	18.7
Eight adult males from Chapada, s. w. Brazil ( <i>N. a. derbyanus</i> ).....	168.6	169.8	11.9	25.5	20.3
Two adult males from s. Bolivia ( <i>N. a. derbyanus</i> ).....	174	175	11.2	26	21.7

Northern South America, Central America, and extreme southern Mexico, from State of Chiapas (Huehuetán; Palenque) southward through Guatemala (Choctúm; Cobán; Chiséc; Cajabón; pine ridge of Poctún; Telemán; San Gerónimo; Dueñas; Retalhuleu; Los Amates, Ysabál; Patulúl, Sololá; Gualán; Lake Amatitlán; San José; Naranjo; Santo Tomas), British Honduras (Toledo District), Honduras (Tigre Island; San Pedro; Céiba; Rio Segóvia), Nicaragua (Los Sábalos; Sucuyá; Ometepe; Greytown; San Juan del Sur; Rio Escondido; Momotombo), Costa Rica (San José; Angostura; Cartago; Naranjo de Cartago; Volcán de Irazú; Monróvia; Turrialba; Orósi; Guayabo; Bonilla; Pacuare; Chirripó; Rio Frio; Monte Redondo; Miravalles; Bebedero; La Palma de Nicoya; Pigres; San Lucas; Alajuela; Las Trojas; Pozo Azul de Pirrís; Boruca; Térraba; Buenos Aires; Santa Maria, Las Vueltas, and Copéy, Dota), Panamá (Bugaba; Mina de Chorchá; Chitra; Calovévora;

## Footnote—Continued.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
FEMALES.					
Five adult females from s. Texas ( <i>N. a. merrilli</i> ).....	170.5	150.4	12.3	25.9	21
Two adult females from Tamaulipas ( <i>N. a. merrilli</i> ).....	168.2	152	13.2	25.2	20.5
One adult female from Mirador, Vera Cruz, Feb. ( <i>N. a. merrilli</i> )..	166	151	12	25	20.5
One adult female from Mirador, Vera Cruz ( <i>N. a. sumichrasti?</i> )...	161	135	12.5	26.5	20
One adult female from Puebla, Feb. ( <i>N. a. merrilli</i> ).....	175.5	156	12.5	25	21.5
Six adult females from Sinaloa, Tepic, Jalisco, and Colima ( <i>N. a. nelsoni</i> ).....	160.7	146.4	12.3	24.5	19.9
Six adult females from Tres Marias Islands ( <i>N. a. insularis</i> ).....	168.9	154.9	12.6	24.3	19.7
Three adult females from Vera Cruz (2) and Puebla (1) ( <i>N. a.</i> <i>sumichrasti</i> ).....	161.8	146.3	11.2	24.2	19.5
Three adult females from Oaxaca ( <i>N. a. nelsoni</i> ).....	161.7	148.8	11.7	24.7	19.7
One adult female from Guerrero ( <i>N. a. nelsoni</i> ).....	145	123	12	24	20
Three adult females from Yucatan ( <i>N. a. yucatanensis</i> ).....	163.5	140.5	12.7	25	22
Three adult females from British Honduras ( <i>N. a. yucatanensis?</i> )..	161.8	143.2	12.7	24.5	20.3
Two adult females from British Honduras ( <i>N. a. albicollis?</i> ).....	147.5	133.2	12.7	24.7	20.5
Five adult females from Chiapas (3) and Guatemala (2) ( <i>N. a.</i> <i>albicollis</i> ).....	159.5	142.4	12.2	24.5	20
One adult female from s. Honduras ( <i>N. a. albicollis</i> ).....	148	112.5	12	23.5	19
Two adult females from Nicaragua ( <i>N. a. albicollis</i> ).....	165	147.5	11.5	23.5	20.2
Ten adult females from Costa Rica ( <i>N. a. albicollis</i> ).....	153.3	134.9	12.1	23.9	19.1
Five adult females from Canal Zone, Panama ( <i>N. a. albicollis</i> )...	145.6	132	12	22.9	18.8
Three adult females from San Miguel Island, Panama ( <i>N. a.</i> <i>albicollis</i> ).....	152.2	141	11.2	23.5	19.7
Two adult females from Santa Marta, Colombia ( <i>N. a. albicollis</i> )..	144.7	130.2	11	22.5	19.5
One adult female from Bogota, Colombia ( <i>N. a. albicollis?</i> ).....	155.5	137	10.5	21.5	18
Three adult females from Venezuela ( <i>N. a. albicollis</i> ).....	143.8	133.2	10.2	21.5	18.5
One adult female from Trinidad ( <i>N. a. albicollis</i> ).....	140	132	11	21	17.5
One adult female from Bahia, Brazil ( <i>N. a. derbyanus</i> ).....	165	148	11	24.5	20.5
Four adult females from Chapada, s. w. Brazil ( <i>N. a. derbyanus</i> )..	163.9	152.2	11.8	25	19.4
Three adult females from s. Bolivia ( <i>N. a. derbyanus</i> ).....	167.8	157.3	10.7	25.2	20.2



Boquete; San Miguél Island; Lion Hill; Gatún; Tabernilla; Puerto Bello; Frijole), Colombia, Venezuela, Trinidad, and the Guianas to northern Brazil (Rio Capím; Teffé; Itaituba; Counaný; Amapá; Rio Juruá; Pará; Diamantina).<sup>a</sup>

[*Caprimulgus*] *albicollis* GMELIN, Syst. Nat., i, pt. ii, 1789, 1030 (Cayenne; based on *White-throated Goatsucker* Latham, Synopsis, ii, pt. ii, 596; etc.).—LATHAM, Index Orn., ii, 1790, 585.

[*Caprimulgus*] *albicollis* VIEILLOT, Enc. Méth., ii, 1823, 536.—CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 710.—LÉOTAUD, Ois. Trinidad, 1866, 72.

[*Antrostomus*] *albicollis* BONAPARTE, Consp. Av., i, 1850, 61.

*Nyctidromus albicollis* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 389, part.—CABANIS, Journ. für Orn., 1862, 166 (Costa Rica; crit.).—SCLATER, Proc. Zool. Soc. Lond., 1866, 124 (fig. of bones of foot), 144, part (monogr.); Journ. für Orn., 1867, 276 (translation).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120 (San José and Angostura, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 252 (Maruaria, Venezuela); 1870, 782 (s. of Merida, Venezuela); 1875, 237 (San Cristobal, Venezuela); 1879, 532 (Concordia, Remedios, and Medellin, Colombia).—FRANTZIUS, Journ. für Orn., 1869, 314 (Costa Rica).—WYATT, Ibis, 1871, 375 (Lake Paturia, Colombia).—LAXARD, Ibis, 1873, 389 (Para, Brazil).—BOUCARD, Liste Ois. récol. Guat., 1878, 44 (Guatemala); Proc. Zool. Soc. Lond., 1878, 67 (Cartago, Costa Rica).—SALVIN and GODMAN, Ibis, 1880, 174 (Arihueca, Santa Marta, Colombia; habits); Biol. Centr.-Am., Aves, ii, 1894, 393, part (pine ridge of Poctun, Chisec, Choctun, Coban, Cajabon, Telemán, San Geronimo, Dueñas, and Retalhuleu, Guatemala; San Pedro and Rio Segovia, Honduras; La Libertad and Volcan de San Miguel, Salvador; Chinandega, Momotombo, Sucuya, Ometepe, and San Juan del Sur, Nicaragua; San Jose, Angostura, Irazu, La Palma de Nicoya, Orosi, Turrialba, Monrovia, Pacuare, Chirripo, Las Trojas, Pozo Azul, Alajuela, and Naranjo de Cartago, Costa Rica; Bugaba, Mina de Chorchá, Chitra, Calovevora, etc., Panama; Turbo, Colombia; etc.).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 398 (La Palma de Nicoya, Costa Rica; habits); vi, 1883, 386, 394, 406 (Sucuya, Id. of Ometepe, and Los Sabalos, Nicaragua).—BERLEPSCH, Journ. für Orn., 1884, 314 (Bucaramanga, Colombia).—SALVIN, Ibis, 1885, 439 (Bartica Grove, British Guiana).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Las Trojas, Pozo Azul de Pirris, Alajuela, Angostura, and Naranjo de Cartago, Costa Rica).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 46 (Boruca, Terraba, and Buenos Aires, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 515 (Greytown, Nicaragua; habits; notes).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 60 (Trinidad; habits; notes).—UNDERWOOD, Ibis, 1896, 442 (Volcan de Miravalles and Bebedero, Costa Rica).—PHELPS, Auk, xiv, 1897, 366 (Cumanacoa, Venezuela).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta, Colombia); Proc. New Engl. Zool. Club, ii, 1900, 17 (Lion Hill, Panama; crit.); iii, 1902, 26 (Boquete, Panama); Bull. Mus. Comp. Zool., xxxix, 1903, 144 (Ceiba, Honduras).—STONE, Proc. Ac. Nat. Sci. Phila., 1899, 305 (Honda, centr. Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 137 (Bonda, etc., Santa Marta, Colombia).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 90 (Altagracia, Caicara, Ciudad Bolívar, Suapure, La Union, and La

<sup>a</sup> Insufficiency of material from South American localities prevents decision as to whether the species as occurring in the region from the Amazon northward should be subdivided into subspecies or not. The material examined, however, shows very little, if any, difference from the Central American series.

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- Nyctidromus albicollis albicollis* HELLMAYR, Novit. Zool., xiii, 1906, 38 (Laventilla and Chaguanas, Trinidad; crit.); xiv, 1907, 24 (Itaituba, Brazil; crit.), 78 (Teffe, Brazil; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 501 (Costa Rica; crit.; habits; descr. nest and eggs).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 198 (extralimital).
- [*Nyctidromus*] *albicollis* GRAY, Hand-list, i, 1869, 60, no. 685.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 97, part.—SHARPE, Hand-list, ii, 1900, 83.
- [*Caprimulgus*] *guianensis* GMELIN, Syst. Nat., i, pt. ii, 1789, 1030 (based on *Crepaud-volant ou Petite-Chevre roux de la Guiane* Buffon, Pl. Enl., pl. 733; *Guiana Goatsucker* Latham, Synopsis, ii, pt. 2, 596).—LATHAM, Index Orn., ii, 1790, 586.
- C[aprimulgus] guianensis* MAXIMILIAN, Beitr. Naturg. Bras., iii, 1831, 318.
- [*Antrostomus*] *guianensis* BONAPARTE, Consp. Av., i, 1850, 61.
- Nyctidromus guianensis* CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 183, 189 (Cayenne; Surinam); Cat. Caprim. Mus. Phila. Ac., 1851, 10.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 391.—SCLATER, Cat. Am. Birds, 1862, 281, part (Bogota, Colombia; Trinidad).—TAYLOR, Ibis, 1864, 90 (Trinidad).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Panama).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Panama).—PELZELN, Orn. Bras., i. Abth. 1868, 13 (crit.); iv. Abth., 1870, 401.—SALVIN, Proc. Zool. Soc. Lond., 1870, 204 (Calovevora, Mina de Chorchá, and Bugaba, Panama).
- Caprimulgus guyanensis* VIEILLOT, Nouv. Dict. d'Hist. Nat., x, 1817, 239 (Guiana).
- Nyctidromus guyanensis* GOELDI, Ibis, 1897, 156 (Counany, n. e. Brazil), 161 (Amapá, n. e. Brazil).
- Nyctidromus* ———? TAYLOR, Ibis, 1860, 114 (Tigre Island, Honduras; habits).
- Nyctidromus americanus* (not *Caprimulgus americanus* Linnaeus) CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 179, 180; Cat. Caprim. Mus. Phila. Ac., 1851, 10, part (Nicaragua; South America).—SCLATER and SALVIN, Ibis, 1859, 125, part (Central America; crit.).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Panama).—SALVIN, Ibis, 1866, 203 (Guatemala).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 526 (Rio Frio, Costa Rica; Rio Escondido, Nicaragua).—BERLEPSCH, Novit. Zool., xv, 1908, 269 (Cayenne).
- N[nyctidromus] americanus* CABANIS and HEINE, Mus. Hein., iii, 1860, 92, part (Puerto Cabello, Venezuela; Guiana; Brazil).
- Nyctidromus americanus*? SCLATER and SALVIN, Ibis, 1859, 125, part (Central America; crit.).
- (?) [*Nyctidromus*] *grallarius* BONAPARTE, Consp. Av., i, 1850, 62 (Brazil; coll. Brit. Mus.; ex *Caprimulgus grallarius* Maximilian, manuscript).—GRAY, Hand-list, i, 1869, 60, no. 686.
- Nyctidromus grallarius* CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 179, 183; Cat. Caprim. Mus. Phila. Ac., 1851, 12 (Bogota).—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 392.
- Nyctidromus affinis* GRAY, List Birds Brit. Mus., ii, sec. 1, 1848, 11 (Mexico; Belize, Brit. Honduras).

- Caprimulgus laticaudatus* DRAPIERZ, Dict. Class. Hist. Nat., vi, 1824, 169 (see Cassin, Proc. Ac. Nat. Sci. Phila., 1851, 182).  
*N[ycitridomus] albicollis (typicus)* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 32, part.  
*Nyctidromus albicollis merrilli* (not of Sennett) LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Naranjo and Santo Tomas, Guatemala).  
 (?) *Nyctidromus albicollis gilvus* BANGS, Proc. New Engl. Zool. Club, iii, March 31, 1902, 82 (Santa Marta, Colombia; coll. E. A. and O. Bangs).—ALLEN, Bull. Am. Mus. N. H., xvi, 1905, 281 (Bonda and Don Diego, Santa Marta; descr. eggs).

### NYCTIDROMUS ALBICOLLIS YUCATANENSIS Nelson.

#### YUCATAN CUIÉJO.

Similar to *N. a. albicollis* but larger and paler; similar also to *N. a. merrilli* but smaller and darker. (The grayish phase seems to largely predominate in this form, only one specimen among the seventeen examined being in the rufescent plumage.)

*Adult male*.—Length (skins), 263-300 (283); wing, 163.5-175.5 (167.9); tail, 141-165 (156.7); exposed culmen, 12-14 (13.2); tarsus, 24-28 (25.9); middle toe, 19-23.5 (21.2).<sup>a</sup>

*Adult female*.—Length (skins), 251-263 (256); wing, 157.5-170 (162.7); tail, 132-154 (141.8); exposed culmen, 12-13.5 (12.7); tarsus, 23.5-26.5 (24.7); middle toe, 20-22 (21).<sup>b</sup>

Eastern Tabasco (Montecristo), Campeche (Apazote), Yucatan (Mérida; Tunkas; Chichen-Itza; Xbac; Shkolak; Ticúl; Temáx; Peto; Buctzotz; Mugerres Island; Cozumél Island), and British Honduras (forest near Manatee Lagoon, March, August; Toledo District, January; Orange Walk?; Belize).

*Nyctidromus albicollis* (not *Caprimulgus albicollis* Gmelin) LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 204 (Merida, Yucatan).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 45 (Yucatan).—SALVIN, Ibis, 1889, 368 (Mugerres and Cozumel islands, Yucatan).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Tunkas, Shkolak, and Ticul, Yucatan).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 587, part.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 393, part (Peto, Buctzotz, Temax, Tunkas, Shkolak, Ticul, Merida, Mugerres I., and Cozumel I., Yucatan; Orange Walk and Belize, Brit. Honduras?).

*Nyctidromus albicollis merrilli* (not of Sennett) CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 285 (Chichen-Itza, Yucatan; habits; notes).

*Nyctidromus albicollis yucatanensis* NELSON, Proc. Biol. Soc. Wash., xiv, September 25, 1901, 171 (Tunkas, Yucatan; coll. U. S. Nat. Mus.).—COLE, Bull. Mus. Comp., Zool., 1, 1906, 127 (Chichen-Itza).

### NYCTIDROMUS ALBICOLLIS SUMICHRASTI Ridgway.

#### SUMICHRAST'S CUIÉJO.

Similar in coloration to *N. a. albicollis* but much larger; intermediate in size between *N. a. merrilli* and *N. a. nelsoni* but much darker than either; larger and decidedly darker than *N. a. yucatanensis*.

<sup>a</sup> Twelve specimens.

<sup>b</sup> Six specimens.



*Adult male*.—Length (skins), 285–306 (296); wing, 165.5–175 (171); tail, 158–169.5 (163.7); exposed culmen, 12.5–15 (13.5); tarsus, 25–28.5 (26.7); middle toe, 20.5–22.5 (21.3).<sup>a</sup>

*Adult female*.—Length (skins), 248–271 (257); wing, 159.5–164 (162.1); tail, 135–150 (144.5); exposed culmen, 11–14 (12.2); tarsus, 23.5–26.5 (24.7); middle toe, 18–20.5 (19.3).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Rivera; Orizaba; Miradór; 75 miles southwest of Tampico; Omealca; Córdoba?;<sup>c</sup> Jalapa?;<sup>c</sup> Misantla?;<sup>c</sup> Coátepec?;<sup>c</sup> Huatusco?;<sup>c</sup> Rio Rancho Nuevo?;<sup>c</sup> Santa Ana?;<sup>c</sup> Playa Vicente?<sup>c</sup>) and Tabasco (Frontera, March; Teapa, March); southern Tamaulipas (Tampico)?;<sup>c</sup> Puebla (Tehuacán; Mazatiopám)?.<sup>c</sup>

(?) *Nyctidromus americanus* (not *Caprimulgus americanus* Linnæus) SCLATER, Proc. Zool. Soc. Lond., 1856, 285 (Cordova, Vera Cruz; crit); 1859, 367 (Jalapa, Vera Cruz).

(?) *Nyctidromus americanus*? SCLATER and SALVIN, Ibis, 1859, 125, part (Mexico; crit.).

(?) *N[ycitidromus] americanus* CABANIS and HEINE, Mus. Hein., iii, 1860, 92, part (Jalapa).

(?) *Nyctidromus albicollis* (not *Caprimulgus albicollis* Gmelin) SCLATER, Proc. Zool. Soc. Lond., 1866, 144, part (monogr.; s. Mexico).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 158 (Tehuacan, Puebla).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 587, part (Tampico?, Misantla, Jalapa, Orizaba, Playa Vicente, and Teapa, Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., ii, 1894, 393, part (Misantla, Jalapa, Coatepec, Huatusco, Rio Rancho Nuevo, Santa Ana, Orizaba, Cordova, and Playa Vicente, Vera Cruz; Mazatiopam, Puebla; Tampico, s. Tamaulipas; Teapa, Tabasco).

(?) *Nyctidromus albicollis merrilli* (not of Sennett?) CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 34 (Jalapa).

(?) *N[ycitidromus] albicollis (typicus)* HARTERT, Tierreich, Podarg., Caprim. Macropt., 1897, 32, part (Mexico).

*Nyctidromus albicollis sumichrasti* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 91 (Frontera,<sup>d</sup> Tabasco, s. Mexico; coll. U. S. Nat. Mus.).

### NYCTIDROMUS ALBICOLLIS NELSONI Ridgway.

#### NELSON'S CUIÉJO.

Decidedly larger than *N. a. albicollis*, with grayish phase much paler and tawny phase averaging lighter and brighter, with buff markings of upper parts broader; gray phase similar in coloration to that of *N. a. merrilli*, but size much less.

<sup>a</sup> Three specimens.

<sup>b</sup> Five specimens.

<sup>c</sup> Not having seen specimens from these localities I can not be sure that they represent the present form. Some of them, at least, doubtless do; but others may be *N. a. merrilli*, which in winter extends its range southward to Vera Cruz and Puebla.

<sup>d</sup> By error, the type locality was given in the original description as Teapa instead of Frontera.

*Adult male*.—Length (skins), 255–275 (264); wing, 154.5–171.5 (161.3); tail, 148–157 (153.1); exposed culmen, 12–13.5 (12.6); tarsus, 23.5–26 (24.7); middle toe, 20–22 (21.1).<sup>a</sup>

*Adult female*.—Length (skins), 245–272 (251); wing, 157–169 (159.4); tail, 139.5–158.5 (144.8); exposed culmen, 10.5–14 (12.1); tarsus, 23–25.5 (24.2); middle toe, 19–20.5 (19.9).<sup>b</sup>

Southwestern and middle-western Mexico, in States of Sinaloa (Mazatlán; Presidio de Mazatlán; Escuinapa), Jalisco (Ixtapa; Plains of Colima), Colima (Manzanillo; Colima), Guerrero (Acapulco), and Oaxaca (Santa Efigénia; Tehuantepec; Cuicuitlán; Chihuitán; Salina Cruz), and Territory of Tepic (Santiago; Acaponeta); north-western Chiapas (Tonalá)?; Mexico (near City of Mexico)?; Zacatecas?

*Nyctidromus albicollis* (not *Caprimulgus albicollis* Gmelin) LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 291, part (Mazatlan; Plains of Colima); Bull. U. S. Nat. Mus., no. 4, 1876, 31 (Santa Efigenia, Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 393, part (Presidio de Mazatlan; Mazatlan; San Blas and Santiago, Tepic; Plains of Colima; Colima; Zacatecas; Chihuitan, Santa Efigenia, Tehuantepec, Chimalapa, and Salina Cruz, Oaxaca; Tonalá, Chiapas?; Acapulco, Guerrero).

(?) *Nyctidromus guianensis* (not *Caprimulgus guianensis* Gmelin) SCLATER, Proc. Zool. Soc. Lond., 1864, 176 (near City of Mexico).

*Nyctidromus albicollis merrilli* (not of Sennett) MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 352 (Escuinapa, s. Sinaloa, resident).

*Nyctidromus albicollis nelsoni* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 90 (Colima, Colima, s. w. Mexico; coll. U. S. Nat. Mus.).

### NYCTIDROMUS ALBICOLLIS INSULARIS Nelson.

#### TRES MARIAS CUIÉJO.

Similar in coloration to the tawny or rufescent phase of *N. a. nelsoni* but less bright (not so pronouncedly rufescent)<sup>c</sup> and size decidedly greater.

*Adult male*.—Length (skins), 280–290 (285); wing, 164.5–177.5 (173); tail, 157–167 (164.9); exposed culmen, 12–13.5 (12.7); tarsus, 24–26 (25.1); middle toe, 19–20.5 (19.9).<sup>d</sup>

*Adult female*.—Length (skins), 268–285 (274); wing, 161–174 (168.9); tail, 149–159 (154.9); exposed culmen, 11.5–13 (12.6); tarsus, 23–25 (24.3); middle toe, 18.5–20 (19.7).<sup>e</sup>

<sup>a</sup> Nine specimens.

<sup>b</sup> Ten specimens.

<sup>c</sup> The general tone of coloration (which is very uniform in the series examined) is nearly midway between the extreme phases of *N. a. nelsoni*.

<sup>d</sup> Five specimens.

<sup>e</sup> Six specimens.

## Tres Marias Islands, western Mexico.

*Nyctidromus albicollis* (not *Caprimulgus albicollis* Gmelin) GRAYSON, Proc. Bost. Soc. N. H., xiv, 1871 (1872), 272 (Tres Marias Islands).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 291, part (Tres Marias).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 587, part (Tres Marias).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 393, part (Tres Marias).

*Nyctidromus albicollis insularis* NELSON, Proc. Biol. Soc. Wash., xii, Jan. 27, 1898, 9 (Maria Madre Island, Tres Marias group, w. Mexico; coll. U. S. Nat. Mus.); North Am. Fauna, no. 14, 1899, 44 (Tres Marias; habits).

[*Nyctidromus*] *insularis* SHARPE, Hand-list, ii, 1900, 83.

## NYCTIDROMUS ALBICOLLIS MERRILLI Sennett.

## MERRILL'S CUIÉJO.

Similar in coloration to the grayish phase of *N. a. nelsoni* but much larger; decidedly larger and darker than the grayish phase of *N. a. yucatanensis*; larger and paler than grayish phase of *N. a. sumichrasti*.

*Adult male*.—Length (skins), 300–305 (303); wing, 173–187.5 (182.1); tail, 169–182.5 (176.6); exposed culmen, 11.5–12 (11.9); tarsus, 27–28.5 (27.7); middle toe, 21.5–22.5 (22).<sup>a</sup>

*Adult female*.—Length (skins), 264–290 (288); wing, 164.5–177.5 (170.1); tail, 147.5–156 (150.4); exposed culmen, 11.5–13.5 (12.6); tarsus, 25–27 (25.6); middle toe, 20–21.5 (20.9).<sup>b</sup>

Lower Rio Grande Valley and southern Gulf coast of Texas (Hidalgo, Cameron, Nueces, San Patricio, Aransas, and Refugio counties), and southward into Tamaulipas (Soto la Marina; Alta Mira; Tampico); in winter south to Vera Cruz (Miradór) and Puebla (Metlatoyuca; Tehuacán?; Mazatiopám?).

*Nyctidromus albicollis* (not *Caprimulgus albicollis* Gmelin) MERRILL (J. C.), Bull. Nutt. Orn. Club, i, 1876, 88 (Ft. Brown, Texas, breeding); Proc. U. S. Nat. Mus., i, 1878, 145 (Ft. Brown and Hidalgo, Texas; habits; descr. nest and eggs).—RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 143, part, pls. 1, 2 (generic outlines; synonymy; description); iii, 1880, 188, 233; Nom. N. Am. Birds, 1881, no. 356.—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 90.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 419.—HANCOCK, Bull. Ridgw. Orn. Club, no. 2, 1887, 17 (Nueces R., near Corpus Christi, Texas, 1 spec., April 16).

[*Nyctidromus*] *albicollis* COUES, Key N. Am. Birds, 2d ed., 1884, 450.—RIDGWAY, Man. N. Am. Birds, 1887, 300.

*Nyctidromus americanus* (not *Caprimulgus americanus* Linnæus) SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., v, 1879, 409 (Lomita Ranch, Texas; habits; descr. eggs).

*Nyctidromus albicollis merrilli* SENNETT, Auk, v, no. 1, Jan., 1888, 44 (Nueces R., Nueces Co., Texas; coll. G. B. Sennett).—AMERICAN ORNITHOLOGISTS' UNION, Suppl. to Check List, 1889, 22; Check List, 2d ed., 1895, no. 419; 3d ed., 1910, 198.—RHOADS, Proc. Ac. Nat. Sci. Phila., 1892, 106 (Corpus Christi; breeding).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 160, pl. 2, figs. 1, 2 (eggs).—CARROLL, Auk, xvii, 1900, 344 (Refugio Co., Texas, breeding).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 225.

<sup>a</sup> Four specimens.<sup>b</sup> Nine specimens.



*N[yc]tidromus albicollis merrilli* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 32.

[*Nycitidromus merrilli* SHARPE, Hand-list, ii, 1900, 83.

Genus PHALÆNOPTILUS Ridgway.

*Phalænoptilus a* RIDGWAY, Proc. U. S. Nat. Mus., iii, sig. 1, March 27, 1880, 5.  
(Type, *Caprimulgus nuttallii* Audubon.)

Small Caprimulginae (length about 175–215 mm.) with the nearly truncate tail much shorter than wing, tarsus longer than middle toe without claw, almost wholly naked, outer toe but slightly more than half as long as middle toe, and tenth (outermost) primary shorter than seventh.

Bill rather broadly triangular, its length from frontal feathering only slightly exceeding its width at same point; nostril nearer to tip than to exposed base of bill, opening laterally in anterior end of the inflated, subtubular, nasal fossa, which is somewhat elevated anteriorly. Rictal bristles long (extending beyond tip of bill) but slender; feathers of pileum broad, round-tipped, rather distinctly outlined, those on sides of occiput not unusually developed. Wing moderate, the longest primaries exceeding distal secondaries by decidedly less than half the length of wing; eighth and ninth primaries longest and equal, the seventh decidedly shorter, the tenth (outermost) slightly shorter than seventh. Tail between three-fifths and two-thirds as long as wing, very slightly rounded (difference between length of outermost and middle rectrices not greater than length of bill from nostrils). Tarsus longer than middle toe without claw (about one-seventh as long as wing), almost wholly naked (only the extreme upper portion in front feathered); outer toe (without claw) more than half as long as middle toe without claw but less than half as long as middle toe with claw, slightly shorter than inner toe; hallux half as long as outer toe.

*Plumage and coloration.*—Feathers of pileum broad, with rounded tip, rather distinctly outlined, those on sides of occiput not unusually developed; feathers of chest not unusually developed; surface of plumage of upper parts peculiarly soft (moth-like); no white on primaries, which are banded with black and tawny-buff; tail (except four middle rectrices) tipped with white in both sexes (more narrowly in female), the proximal edge of this white area running straight across, the white distinctly narrower only on inner web of third rectrix.

*Range.*—Western United States and northern Mexico. (Monotypic.)

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<sup>a</sup> *Phalæna* (from *φάλανα*, a devouring monster), a genus of moths, and *πίλον*, a feather; having reference to the moth-like texture and coloration of the plumage.

## PHALÆNOPTILUS NUTTALLII NUTTALLII (Audubon).

## POORWILL.

*Adult male*.—General color of upper parts pale brownish gray or grayish brown, palest on sides of pileum, scapular region, and upper tail-coverts, the lighter areas in fresh or unworn plumage sometimes pale silvery gray, with a soft downy or velvety surface, most of the feathers minutely stippled with darker; pileum (which is usually more brownish, sometimes quite dusky, centrally) with very narrow bars (usually more or less brace shaped) of black, these sometimes widening into spots on center of crown; back and rump also usually with more or less distinct narrow (usually brace shaped) bars of black or dusky; scapulars with a single narrow, sharply defined black bar enlarged in middle into a usually more or less cuneate, hastate, or diamond-shaped spot; wing-coverts and inner secondaries also each with one or more narrow bars and a more or less distinct shaft streak of black; other secondaries irregularly banded with light ochraceous-buff and marbled pale buffy gray and blackish, the bands becoming less distinct (more confused) on distal portion; primary coverts ochraceous-buff crossed by three bands of black, these connected along inside of shaft; primaries ochraceous-buff banded with black, their terminal portion finely marbled or vermiculated grayish, usually with irregular bars of blackish; upper tail-coverts sometimes nearly immaculate, but usually with a few more or less distinct narrow bars of black, sometimes more or less distinctly banded with darker and lighter shades of grayish; middle pair of rectrices pale silvery gray to buffy gray or pale grayish brown, minutely stippled with darker and with a greater or less number of more or less distinct narrow zigzag transverse lines of blackish; second pair banded with dull black and a mixture of pale brownish gray and ochraceous-buff, the bands sometimes distinct and fairly regular, oftener indistinct, irregular, or broken, sometimes replaced by a confused combination of mottlings, marblings, and zigzag markings, the grayish areas always broken by blackish or dusky marblings; third pair similar but rather darker (sometimes uniform brownish black subterminally) and broadly tipped (for about 8–11 mm.) with white; fourth and fifth pairs similar but with the uniform blackish subterminal area or subterminal band, as well as the white tip broader (the latter about 13–20 mm.); loreal, orbital, and auricular regions nearly uniform sooty or sepia brown; malar region and chin lighter sepia or grayish brown, minutely freckled with darker, the former usually intermixed with white on anterior portion, this sometimes forming a distinct rictal spot or streak; throat immaculate silky white, this extending farther backward laterally than on middle portion; extreme lower throat and upper chest mostly uniform very dark sooty brown or

sooty black, the lower chest with tips of feathers pale colored, sometimes pale grayish minutely stippled with darker, sometimes barred with black and pale grayish or white, sometimes a large whitish spot, of variable form; breast and sides dull white or buffy white narrowly barred with dusky brown or black, the barring more close anteriorly, more distant posteriorly; rest of underparts cream buff to buffy white, the flanks sometimes with rather distant and rather broad bars of dusky; under wing-coverts buff (more or less deep) usually immaculate but sometimes with a few dusky spots or bars near edge of wing; inner webs of primaries ochraceous-buff (except terminally) with six or seven large curved transverse spots of dusky, of which the distal ones do not cross to edge of the web; bill black; iris brown; naked eyelids dull ochraceous or ochraceous-brown (in life); legs and feet brownish, the former sometimes more lilaceous (in life); length (skins), 162–209 (187); wing, 125.5–151 (142.5); tail, 77.5–91.5 (85.5); exposed culmen, 10.5–15 (12.1); tarsus, 16–18 (17.5); middle toe, 16–18.5 (17.4).<sup>a</sup>

*Adult female*.—Similar to the adult male and often not distinguishable, but usually (?) with white tip to lateral rectrices slightly narrower; length (skins), 171–205 (189); wing, 132–152.5 (142.6); tail, 80–95.5 (87.3); exposed culmen, 10–13.5 (12.1); tarsus, 17–19 (17.6); middle toe, 15.5–19 (17.4).<sup>b</sup>

*Young*.—Not essentially different from adults, but markings in general less sharply defined, especially on underparts, and throat patch buff instead of white.

*Downy young*.—Downy covering vinaceous-buff, paler on underparts; feathers appearing on upper parts dull buffy white minutely stippled and vermiculated with grayish and with small spots and narrow bars of black; those on middle underparts dull white barred, more or less distinctly, with grayish or dusky.

<sup>a</sup> Forty specimens.

<sup>b</sup> Thirty-two specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Nine adult males from Texas (6) and New Mexico (3).....	139.4	83.4	13.1	17.2	17.3
Five adult males from Colorado (2), Wyoming (2), and Montana (1).....	147.4	87.6	11.3	17.8	17.8
Ten adult males from Arizona.....	142.1	85.5	12.2	17.9	17.6
Five adult males from Lower California.....	138.6	86.5	11.9	17.4	17.2
Three adult males from s. e. California.....	142.5	85	11	16.8	16.5
Six adult males from Nevada (3) and Utah (3).....	143	86	11.7	17.7	17.5
One adult male from Sonora (May).....	146	89	12	16	16
One adult male from Coahuila (May 21).....	142.5	82	12.5	18.5	18.5
Nine adult males from n. w. California ( <i>P. n. californicus</i> ).....	146.8	87.3	12	17.2	17.4



Western United States, breeding in Transition and Upper Sonoran zones; north to southeastern British Columbia ("from Kamloops to the Okanogan"), Idaho (Blackfoot), Montana (Valley, Custer, Gallatin, and Fergus counties), and northwestern North Dakota; east to southeastern South Dakota, eastern Nebraska, western Iowa (Grinnell), eastern Kansas (Shawnee, Riley, and Lyon Counties), and western and central Texas (Pecos, Bexar, Navarro, Tom Green, Concho, Mason, Eastland, and Brewster Counties; Medina River; Devils River; Red River); west to eastern base of Cascade and Sierra Nevada Mountains; south through Lower California (except San Pedro Martir Mountains, and northwest coast district?) to Sierra de la Laguna (June), and through Sonora (Providencia Mines, May), and Chihuáhua (San Diego), to northern Coahuila (Sabinas, May 21; Saltillo, May 6) and Guanajuato, central Mexico.

*Caprimulgus nuttallii* AUDUBON, Orn. Biog., v, 1839, 335 (nomen nudum); Birds Am., oct. ed., vii, 1844, 350, pl. 495 (east bank of Missouri R., between Ft. Union and Ft. Pierre).—WOODHOUSE, Rep. Sitgreaves's expl. Zuni and Col. R., 1853, 63 (Arizona).—KOENIG-WARTHAUSEN, Journ. für Orn., 1868, 379 (nesting; descr. eggs).

[*Caprimulgus*] *nuttallii* GRAY, Hand-list, i, 1869, 59, no. 662.

*Antrostomus nuttallii* CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 183; Journ. Ac. Nat. Sci. Phila., ii, pt. ii, Jan. 1852, 123.—BREWER, N. Am. Oology, 1857, 86.—(?)NEWBERRY, Rep. Pacific R. R. Surv., vi, pt. iv, no. 2, 1857, 77, part (California; Oregon; habits).—KENNERLY, Rep. Pacific R. R. Surv., x, no. 3, 1859, 23 (Colorado R.).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 129 (Topeka, Kansas, common), 179 (e. Kansas; Colorado, up to 8,000 ft.; Utah).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 129 (Apache, Camp Grant, etc., Arizona; descr. young).

*Antrostomus nuttalli* CASSIN, Cat. Caprim. Mus. Ac. Nat. Sci. Phila., 1852, 13; Illustr. Birds Calif., Texas, etc., 1855, 237.—BAIRD, in Stansbury's Rep. Gt. Salt Lake, 1852, 327, part (Ft. Union); Rep. Pacific R. R. Surv., ix, 1858, 149, part; Cat. N. Am. Birds, 1859, no. 113, part; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 6 (Rio Mimbres, New Mexico; habits).—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859,

Footnote—Continued.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
FEMALES.					
Eight adult females from Texas (7) and New Mexico (1).....	139.6	83.2	12.6	18.1	17.8
Three adult females from Colorado, Montana, and Idaho.....	145.5	84.7	11.8	17.5	17.8
Nine adult females from Arizona.....	143.2	86.1	12.2	17.4	17.1
One adult female from s. Lower California (June).....	142	95.5	10	16.5	17.5
One adult female from n. Lower California (May 28).....	142.5	83.5	11.5	17.5	17.5
Two adult females from s. e. California.....	144.7	91	12.2	17	17
Five adult females from Nevada (3) and Utah (2).....	145.1	85.4	12.4	17.4	17.8
One adult female from Coahuila (May).....	137	84	12	18	18
One adult female from Sonora (May).....	150	88	12	17.5	17
Eleven adult females from n. w. California ( <i>P. n. californicus</i> )....	141.1	84.6	11.5	17	17.1
One adult female from w. coast Lower California (May).....	134	80	10.5	17.5	17

- 35, part (Ft. Yuma, California).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. 2, 1860, 166 (Oregon and Washington east of Cascade Mts.).—DRESSER, Ibis, 1865, 470 (Medina and Devils rivers, Ft. Stockton, and San Antonio, Texas).—SCLATER, Proc. Zool. Soc. Lond., 1866, 137 (monogr.); Journ. für Orn., 1867, 269.—COUES, Ibis, 1865, 158 (Kansas); Proc. Ac. Nat. Sci. Phila., 1866, 58 (Ft. Whipple, Arizona; habits); Check List, 1873, no. 266, part; Am. Nat., vii, 1873, 325 (descr. eggs); Birds Northwest, 1874, 261, part.—COOPER, Orn. Calif., 1870, 341, part.—MERRIAM, Sixth An. Rep. U. S. Geol. Surv., 1872, 692 (Ogden, Utah).—SNOW, Birds Kansas, 1873, 3 (e. and middle Kansas).—AIKEN, Proc. Bost. Soc. N. H., xv, 1872, 206 (Wyoming).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 88 (Ft. Garland, Colorado; habits); Zool. Exped. W. 100th Merid., 1875, 369 (Denver and Ft. Garland, Colorado; Apache, Camp Grant, Willow Springs, Rock Canyon, Bowie, Mt. Graham, etc., Arizona; habits).—ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 62 (Musselshell R., Montana).—BENDIRE, Proc. Bost. Soc. N. H., 1877, 128 (Camp Harney, Oregon; descr. eggs).—McCAULEY, Bull. U. S. Geol. and Geog. Surv. Terr., iii, 1877, 675 (Red R., Texas; habits).—RIDGWAY, Orn. 40th Parallel, 1877, 567 (localities in Nevada and Utah; habits, measurements, etc.).—BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 21 (Tombstone, etc., Arizona).
- [*Antrostomus*] *nuttalli* COUES, Key N. Am. Birds, 1872, 181, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96.
- P[halænoptilus]* *nuttalli* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 5; Man. N. Am. Birds, 1887, 299, 588, part; 2d ed., 1896, 597, part.—COUES, Key N. Am. Birds, 2d ed., 1884, 453, part.
- Pnalænoptilus nuttalli* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 355, part.—OGILBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 56 (Navarro Co., Texas, summer visitant; habits).—DREW, Auk, ii, 1885, 17 (Colorado; vertical range).—SCOTT, Auk, ii, 1885, 356 (Santa Catalina Mts., Arizona).—SHUFELDT, Auk, ii, 1885, 382 (Ft. Wingate, New Mexico; feeding habits).—HENSHAW, Auk, iii, 1886, 78 (upper Pecos R., New Mexico).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 418.—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 206 (Mt. Lassen, n. e. California).—LLOYD, Auk, iv, 1887, 191 (Tom Green and Concho counties, Texas).—COOKE, Bird Migr. Miss. Val., 1888, 136 (Grinnell, Iowa; s. e. South Dakota; Nebraska; Manhattan and Emporia, Kansas; Mason and San Angelo, Texas); Bull. 37, Col. Agric. Coll., 1897, 85 (Colorado, breeding up to 8,000 ft.).—MEARNS, Auk, vii, 1890, 254 (Mogollon Mts., Arizona).—GOSS, Birds Kansas, 1891, 345.—ATTWATER, Auk, ix, 1892, 235 (San Antonio, Texas, summer resident).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 116 (Santa Catalina Mts., Arizona, breeding in oak belt).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 579 (Guanajuato, Mexico; etc.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 389 (Guanajuato).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 153, pl. 1, fig. 23 (egg).—BROOKS, Auk, xvii, 1900, 106 (s. British Columbia east of Cascade Mts.).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 15 (Huachuca Mts., Arizona, mostly below 5,000 ft. but occurring up to 10,000 ft.; habits; crit.).—SAUNDERS, Auk, xxviii, 1911, 38 (Gallatin Co., Montana).
- [*Phalænoptilus*] *nuttalli* SHARPE, Hand-list, ii, 1900, 83.
- Phalænoptilus nuttalli* AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, 169.—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 224.—KERMODE, Prov. Mus. Victoria, 1909, 51 (Kamloops, etc., Brit. Columbia).
- Phalænoptilus nuttalli nuttalli* GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 39 (California range).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 197.

*Phalænoptilus nuttalli nitidus* BREWSTER, Auk, iv, April, 1887, 147 (Nueces R., Texas; coll. W. Brewster); Bull. Mus. Comp. Zool., xli, 1902, 109 (Sierra de la Laguna, Lower California, June; crit.).—RIDGWAY, Man. N. Am. Birds, 1887, 594.—CHAPMAN, Auk, v, 1888, 396.—COOKE, Bird Migr. Miss. Val., 1888, 137; Bull. 37, Col. Agric. Coll., 1897, 85 (Ft. Lyon, Colorado); no. 56, 1900, 224 (crit.).—HASBROUCK, Auk, vi, 1889, 239 (Eastland Co., Texas).—GOSS, Auk, vi, 1889, 124 (Neosho Falls, s. e. Kansas); vii, 1890, 286 (Leonardville, Riley Co., Kansas).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 10 (no. 418a); Abridged Check List, 1889, no. 418a; Check List, 3d ed., 1910, 197.—ATTWATER, Auk, ix, 1892, 235 (San Antonio, Texas).—ANTHONY, Auk, ix, 1892, 362 (Apache and Sierra Hachita, s. w. New Mexico, April, Nov.).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 36 (San Diego, Chihuahua, Nov.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 157.—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 39 (California range).—MARSHALL, Proc. Am. Philos. Soc., xlv, 1905, 213-240, pls. 4-6 (anatomy).—VISHER, Auk, xxvii, 1910, 282 (Tucson Valley, Arizona, breeding).

*P[halænoptilus] nuttalli nitidus* RIDGWAY, Man. N. Am. Birds, 1887, 588; 2d ed., 1896, 597.

*P[halænoptilus] n[uttalli] nitidus* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 225.

*Ph[alænoptilus] nuttalli nitidus* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 34.

*Phalænoptilus nuttalli nitidus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 418a.—COOKE, Bull. 44, Col. Agric. Coll., 1898, 162 (Colorado Springs).—MONTGOMERY, Auk, xxii, 1905, 14 (Brewster Co., Texas).

*[Phalænoptilus] nitidus* SHARPE, Hand-list, ii, 1900, 83.

*Ph[alænoptilus] nuttalli (typicus)* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 34 (includes *P. n. californicus*).

### PHALÆNOPTILUS NUTTALLII CALIFORNICUS Ridgway.

#### DUSKY POORWILL.

Similar to *P. n. nuttallii*, but averaging darker above, with black markings (especially on scapulars) larger, and bars on underparts heavier or broader.

*Adult male*.—Length (skins), 175-203 (193); wing, 142.5-151.5 (146.8); tail, 79.5-91.5 (87.3); exposed culmen 11-13 (12); tarsus, 16-18 (17.2); middle toe 16.5-18 (17.4).<sup>a</sup>

*Adult female*.—Length (skins), 177-193 (184); wing, 134-149.5 (141.1); tail, 81-92 (84.6); exposed culmen, 10-13 (11.5); tarsus, 15-18 (17); middle toe, 15.5-18.5 (17.1).<sup>b</sup>

California, except southeastern and northeastern desert districts; north to Mendocino County, south to San Pedro Martir Mountains, San Fernando, etc., northern Lower California.<sup>c</sup>

<sup>a</sup> Nine specimens.

<sup>b</sup> Eleven specimens.

<sup>c</sup> The California material examined is rather meager except for the vicinity of Nicasio, Marin County (the type locality). Such as it is inclines me to believe that this form is restricted in its range to the humid coast strip, for the only perfectly typical examples seen come from that area. Some specimens from San Diego County and one from San Fernando, Lower California, seem, however, to be nearer this form than to typical *P. nuttallii*.



- (?) *Antrostomus nuttallii* (not *Caprimulgus nuttallii* Audubon?) CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 183 (crit.); Journ. Ac. Nat. Sci. Phila., ii, pt. ii, Jan., 1852, 123 (Calif.; Oregon); Illustr. Birds Texas, etc., 1855, 237 (Oregon; Wash.); Orn. U. S. Expl. Exped., 1858, 187 (Oregon).—NEWBERRY, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1857, 77, part (Calif. and Oregon; habits).
- (?) *Antrostomus nuttalli* BAIRD, in Rep. Stansbury's Surv. Gt. Salt Lake, 1852, 327, part (California); Rep. Pacific R. R. Surv., ix, 1858, 149, part (Petaluma and Santa Clara, California); Cat. N. Am. Birds, 1859, no. 113, part.—HEERMANN, Rep. Pac. R. R. Surv., x, pt. vii, no. 2, 1859, 35, part (Ft. Tejon, California).—COUES, Check List, 1873, no. 266, part; Birds Northwest, 1874, 261, part (in synonymy, etc.).
- Antrostomus nuttalli* COOPER, Orn. Calif., 1870, 341, part.
- [*Antrostomus*] *nuttalli* COUES, Key N. Am. Birds, 1872, 181, part.
- P[halænoptilus] nuttalli* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 5, part; Man. N. Am. Birds, 1887, 299, 588, part; 2d ed., 1896, 597, part.—COUES, Key N. Am. Birds, 2d ed., 1884, 453, part.
- Phalænoptilus nuttalli* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 188, part; Man. N. Am. Birds, 1881, no. 355, part.—(?)EVERMANN, Auk, iii, 1886, 179 (Ventura Co., California).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 579, part.—(?)ANTHONY, Auk, xii, 1895, 139 (San Fernando, Lower California; crit.).
- P[halænoptilus] nuttalli californicus* RIDGWAY, Man. N. Am. Birds, Sept. 27, 1887, 588, footnote (Nicasio, Marin Co., California; coll. U. S. Nat. Mus.).
- Phalænoptilus nuttalli californicus* RIDGWAY, Man. N. Am. Birds, 1887, 592; 2d ed., 1896, 614.—CHAPMAN, Auk, v, 1888, 396.—AMERICAN ORNITHOLOGISTS' UNION, Suppl. to Check List, 1889, 10; Check List, 3rd ed., 1910, 197.—(?)BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 287 (between Tia Juana and San Pedro Martir, Comondú, and Pozo Grande, Lower California, up to 8,000 ft.; call-notes).—(?)ANTHONY, Zoë, iv, 1893, 236 (San Pedro Martir Mts., Lower California).—(?)FISHER (A. K.), North Am. Fauna, no. 7, 1893, 52 (Kern R. and Twin Oaks, California).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 158.—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 26 (Los Angeles County, resident); Pacific Coast Avifauna, no. 3, 1902, 40 (California range); (?)Univ. Calif. Pub. Zool., v, 1908, 64 (San Bernardino Mts., 4,500–7,500 ft.).—VAN DENBURGH, Proc. Am. Philos. Soc., xxxviii, 1899, 164 (Santa Clara Co.; habits).—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, Mendocino Co.).—JENKINS, Condor, viii, 1906, 126 (Monterey Co.).—Richardson, Condor, x, 1908, 66 (Santa Catalina I.).
- Phalænoptilus nuttallii californicus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 418b.—GRINNELL (J.), Pub. 1, Pasadena Ac. Sci., 1897, 14 (San Clemente I.).
- P[halænoptilus] n[nuttallii] californicus* BAILEY (Forence M.), Handb. Birds W. U. S., 1902, 225.
- [*Phalænoptilus*] *californicus* SHARPE, Hand-list, ii, 1900, 83.
- Ph[alænoptilus] nuttalli (typicus)* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 34, part.

#### Genus OTOPHANES Brewster.

*Otophanes*<sup>a</sup> BREWSTER, Auk, v, no. 1, Jan., 1888, 88. (Type, *O. meleodii* Brewster.)

Rather small Caprimulginae (length about 195–205 mm.) with feathers of chest elongated, forming an erectile lappet or "apron;"

<sup>a</sup> ὠδς (ὠτὸς) ear; φαίνω show. (Brewster.)

latero-occipital feathers elongated, forming conspicuous, erectile, pointed "ear-tufts;" lateral margin of pileum forming a sharp projecting ridge from base of bill to base of ear-tufts; rictal bristles extremely long, strongly incurved terminally.

Bill small and relatively very narrow, feathered on top as far as middle of nostrils. Nostril broadly oval, tubular, opening laterally. Wing rather long and pointed, the longest primaries exceeding distal secondaries by more than one-third the length of wing; eighth and ninth primaries longest, the seventh slightly but decidedly shorter, the tenth (outermost) equal to sixth. Tail four-fifths as long as wing, slightly rounded, the rectrices appreciably widening distally, with broadly rounded tip. Tarsus very slightly longer than middle toe without claw, naked, except extreme upper portion in front.

*Plumage and coloration.*—Prefrontal feathers erect, those on mesorhinium with small bristly tips; rictal bristles extremely long, strongly incurved terminally; feathers of pileum extremely broad, broadly rounded at tip; feathers forming upper margin of loreal and superciliary regions directed upward and outward forming a conspicuous, sharp, projecting ridge along each side of pileum, from base of bill to base of the conspicuous, erectile, pointed "ear-tufts" formed by the elongated latero-occipital feathers, the outermost of which have slender projecting bristles; feathers of the chest elongated, forming a conspicuous erectile lappet or "apron," the posterior edge of which is abruptly defined against the much shorter and differently colored plumage of the breast; plumage in general very soft, velvety. General color chestnut, this much broken above by grayish mottling, the scapulars with large spots of much darker chestnut shading into blackish and narrowly margined with buffy; pileum not streaked; a white band across lower throat; rectrices (except middle pair) tipped with whitish; primaries banded or spotted with cinnamon-buff and dusky.

In wing-formula, relative length of wing and tail, shape and "pattern" of the latter, and naked tarsi, this remarkable form resembles *Phalænoptilus*, from which, however, it differs greatly in possessing very conspicuous pointed ear-tufts, narrower bill, longer and more slender rictal bristles, conspicuous, erectile jugular "flap," relatively shorter tarsus and much longer hallux, and very different style of coloration.<sup>a</sup>

*Range.*—Mexico. (Monotypic.)

#### OTOPHANES MCLEODII Brewster.

##### EARED POORWILL.

*Adult male.*—Top of the head sandy brown, minutely mottled with buff and shaded with darker brown; hindneck banded with buff and

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<sup>a</sup> *Otophanes* is in reality very much more closely allied to *Nyctagreu*s, the few differences between these two genera being mentioned under the latter on p. 556.

deep brown; back and rump similar to the crown; scapulars with very large blackish-brown velvety spots, encircled by a buff line; upper wing-coverts with rounded cream-white spots; primaries deep brown, banded with pale rufous; secondaries similar, but mottled on the outer webs; innermost secondaries like the scapulars; innermost pair of rectrices colored like the back and rump, the other pairs deep brown, indistinctly barred with rufous near the base, tipped with white; lower parts paler than the upper surface; a band of silky white across the throat; feathers of the abdomen with a white tip and a dark brown line before the white tip; "iris brown." Total length about 8.5 inches [=204.5 mm.], wing 5.2 [132.1 mm.], tail 4 [101.6 mm.], tarsus 0.6 [15.24 mm.]<sup>a</sup>

*Adult female*.—Prevailing color of pileum anteriorly and laterally finely mottled buffy grayish, paler along the lateral margin; median portion of crown and occiput chiefly chestnut, finely mottled or sprinkled with dusky, the underlying portion of the feathers the same color as sides of crown; back finely mottled or vermiculated dark rusty or chestnut and dull buffy, the former prevailing; scapulars finely mottled dull grayish buffy (like sides of crown), the innermost row of feathers marked with sharply defined spots of black or mixed black and chestnut, each spot surrounded by a narrow ring (more or less distinct) of dull light buffy; exterior scapulars with outer webs mostly chestnut mottled with dusky, the longer scapulars similarly marked, but with the chestnut patch extending over greater portion of both webs; general color of wing-coverts dull chestnut, finely mottled with dusky, but the general color relieved by a cluster of buffy spots on central portion of wing-covert area; secondaries coarsely banded with dusky and pale chestnut or chestnut-buffy, the former prevailing basally, the latter more broken up terminally into a confused mottling of pale chestnut or dull buffy and grayish dusky, the feathers margined at tips with buffy; primary coverts dusky, with large spots of tawny-ochraceous on outer webs; primaries banded with dusky and tawny-ochraceous, the latter wider on outer webs, where dusky bands are more broken, but narrower and deeper in color on inner webs, where dusky bands are very distinct and mostly "solid" dusky; lower back, rump, and upper tail-coverts (the longer of the latter wanting however), finely mottled grayish buffy, chestnut, and dusky, the prevailing color being a dull buffy brownish; tail finely mottled pale chestnut, buffy, and grayish dusky, crossed by about ten indistinct lighter and darker bars, the four outer rectrices (on each side) tipped with dull white (becoming buffy on fourth and outer web of first), this white tip broadest on second rectrix (from outside), on which it measures about 12 mm. wide; sides of head nearly uniform dull tawny-ochraceous, this deepest on lores, superciliary

<sup>a</sup> Hartert, Cat. Birds Brit. Mus., xvi, 1892, 581.



region, and outer side of auricular region; chin and upper throat finely mottled dull light tawny; a white patch, about 12.7 mm. wide, across lower throat; feathers of chest much elongated, especially posteriorly, the prevailing color finely mottled light chestnut or chestnut-tawny, becoming gradually grayer and more distinctly mottled posteriorly, where some of the longer feathers have narrow whitish tips, preceded by a dusky bar; breast nearly uniform tawny-chestnut; sides paler, and marked with larger whitish and smaller blackish sagittate spots; belly, anal region, and under tail-coverts buffy, indistinctly barred or transversely spotted with darker and paler; length (skin), 203; wing, 124.5; tail, 106.7; culmen, 5; tarsus, 16.5; middle toe, 17.8; hind toe, 5.1.<sup>a</sup>

According to Messrs. Salvin and Godman (Biol. Centr.-Am., Aves, ii, 1892, 391), the male described above "is in much grayer plumage than the female type, as represented in the figure" (Auk, viii, 1891, pl. 1); and, although Mr. Hartert (Cat. Birds Brit. Mus., xvi, 1892, 581) expresses himself to the same effect, his description (quoted above) does not seem to indicate very material difference. It is probable, however, that the sexes differ in color, as do those of *Nyctagreu yucatanicus*, in which the female is conspicuously more rufescent than the male.

Northwestern Mexico, in States of Chihuahua (Sierra Madre) and Jalisco (Hacienda San Marcos, Zapotlán); Sonora!;<sup>b</sup> Vera Cruz (Jalapa)?<sup>b</sup>

*Otophanes mcleodii* BREWSTER, Auk, v, no. 1, Jan., 1888, 89 (Sierra Madre of Chihuahua; coll. W. Brewster).—[ALLEN], Auk, viii, 1891, pl. 4.

*Otophanes mcleodi* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 581 (Hacienda de San Marcos, Zapotlan, Jalisco; descr. adult male).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 391.

*O[tophanes] mcleodi* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 34.

*[Otophanes] mcleodi* SHARPE, Hand-list, ii, 1900, 83 (Sonora to Jalapa, Vera Cruz).

#### Genus NYCTAGREUS Nelson.

*Nyctagreu c* NELSON, Proc. Biol. Soc. Wash., xiv, Sept. 25, 1901, 171. (Type, *Caprimulgus yucatanicus* Hartert.)

*Nyctiagrius* (emendation) [SCLATER], Ibis, 1902, 345.

Small Caprimulginae (length about 190–200 mm.) resembling the genus *Otophanes* but differing in much more slender and nearly straight rictal bristles, shorter and less pointed latero-occipital feathers (not forming distinct "ear-tufts") and with feathers of loreal and superciliary regions not forming a projecting ridge along each side of pileum; tail and tarsus relatively longer.

<sup>a</sup> Description from the type of the species, no. 14123, coll. William Brewster; Sierra Madre of Chihuahua, Dec. 6, 1884; R. R. McLeod, collector.

<sup>b</sup> According to Sharpe (Hand-list, ii, 1900, 83).

<sup>c</sup> Νύξ=night; ἀγρῆς=hunter. (Nelson.)

Bill small and relatively very narrow, feathered on top as far as nostrils, or slightly farther. Nostril (apparently) narrowly oval, semitubular, opening laterally. Wing rather long and pointed, the longest primaries exceeding distal secondaries by one-third the length of wing; seventh and eighth primaries longest, the ninth very slightly shorter, the tenth (outermost) slightly shorter than sixth. Tail seven-eighths as long as wing, or slightly more, slightly rounded, the rectrices widening distally, with broadly rounded or obliquely subtruncate tip. Tarsus as long as middle toe with claw.

*Plumage and coloration.*—Prefrontal feathers erect, those on mesorhinium short and without bristly tips; rictal bristles extremely long but very slender and but slightly if at all incurved terminally; feathers of pileum rather narrow, narrowly rounded at tip; feathers of loreal and superciliary regions not erect, not forming a projecting ridge along sides of pileum; latero-occipital feathers somewhat elongated but not pointed, without bristly tips, and not forming distinct "ear-tufts"; feathers of chest elongated, forming a conspicuous erectile lappet or "apron," the posterior edge of which is abruptly defined against the much shorter and differently colored plumage of the breast; plumage in general very soft, with velvety surface. General color chestnut-brown, much broken by dusky mottlings, vermiculations, and streaks, the scapulars with conspicuous angular or cuneate spots of black; pileum streaked with black; a white band across lower throat; rectrices (except middle pair) tipped with white; primaries banded or spotted with cinnamon-buff and dusky.

*Range.*—Southeastern Mexico (Yucatan and Campeche). (Monotypic.)

### NYCTAGREUS YUCATANICUS (Hartert).

#### YUCATAN POORWILL.

*Adult male (brown phase)?*<sup>a</sup>—General color of upper parts rather deep grayish brown (nearest sepia or bistre), the lateral portions of pileum (broadly), more decidedly grayish, nearly everywhere minutely vermiculated with dusky and with more or less distinct mesial streaks of black, these broader and sublanceolate on median portion of pileum, and on scapulars (especially the more posterior ones) still broader,

<sup>a</sup> The specimen from which the description is taken is not sexed, but I assume that it is a male from the difference in pattern of the white tip to the two outer rectrices from that of a female, this difference corresponding with the sexual difference in *Phalaenoptilus*, a closely related form. The difference in general coloration, assumed to represent a "grayish phase" and a "rufescent phase," respectively, may be in reality merely a sexual difference.

[Since the above was put in type an adult male, collected by G. F. Gaumer, at Xbac, Yucatan, has been examined. This is in the grayish brown plumage described above, thus confirming the suggested sexual difference in coloration.]

obliquely cuneate, and developed most on outer web; middle wing-coverts with irregular terminal small spots of white; proximal secondaries light brown (becoming paler, almost white terminally, on innermost), finely vermiculated or sprinkled with dusky and with a very distinct mesial streak of black, this streak on some feathers with several spot-like dilatations; remaining secondaries dusky crossed by four bands of pale cinnamon or clay colored spots, these more or less broken by dusky vermiculations; primaries dusky, spotted with cinnamon-buff or light clay color, their terminal portion pale brown vermiculated with dusky; two lateral rectrices (on each side)<sup>a</sup> sharply tipped with white (this about 17 mm. wide on outermost and 15 mm. wide on the second, at widest part), the subterminal portion (extensively) uniform dull black, the remainder dull black freckled or mottled, in transverse series, with pale grayish buffy; loreal, orbital, auricular, and malar regions, chin, and upper throat dark sooty brown or brownish black, very minutely vermiculated (at least in part) with brown; lower throat white, forming a conspicuous broad transverse bar or patch; jugular "apron" brownish black, the feathers tipped with grayish vinaceous-brown, minutely vermiculated with dusky and with a shaft-streak of black, these brownish tips smaller anteriorly, forming spots on the blackish ground, but posteriorly covering the whole exposed surface of the feathers; under parts of body rather coarsely vermiculated brown and light grayish (the upper breast more uniform brownish), the feathers with a black mesial streak, many of them with a sagittate terminal spot of white; flanks and under tail-coverts barred with black and pale dull buffy; bill brown, darker terminally; tarsi pale brownish, toes darker; length (skins), 190–200; wing, 103–114; tail, 94–101; culmen (from cere), 6.5–8; tarsus, 15.5–18; middle toe, 14.5.<sup>b</sup>

*Adult female (rufescent phase).*—Similar to the adult male in grayish phase, but the general grayish-brown coloration replaced by rufescent brown or russet, black streaks on pileum narrower, and white tips to lateral rectrices slightly narrower (about 6 mm. wide on the outermost); length (skins), 198–200 (199); wing, 110–117 (113.5); tail, 101–107 (104); exposed culmen, 10–10.5 (10.2); tarsus, 15–16 (15.5); middle toe, 14.5–15 (14.7).<sup>c</sup>

Yucatan (Tizimin; Chichen-Itza; Xbac) and Campeche (Apazote), southeastern Mexico.

*Caprimulgus yucatanicus* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 575 (Tizimin, Yucatan; coll. Brit. Mus.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 388, pl. 58a.

*C[aprimulgus] yucatanicus* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 40.

<sup>a</sup> All the other rectrices are wanting in the specimen described.

<sup>b</sup> One specimen.

<sup>c</sup> Two specimens.



[*Caprimulgus*] *yucatanicus* SHARPE, Hand-list, ii, 1900, 84.

*Nyctagreuus yucatanicus* COLE, Bull. Mus. Comp. Zool., 1, 1906, 127 (Chichen-Itza, Yucatan).

### Genus CHORDEILES Swainson.

*Chordeiles* SWAINSON, Fauna Bor.-Am., ii, 1831, 496. (Type *Caprimulgus virginianus* Gmelin.)

*Chordeilus* (emendation) GRAY, List Gen. Birds, 1840, 7.

*Chordediles* (emendation) CABANIS and HEINE, Mus. Hein., iii, Aug., 1860, 86.

*Chordiles* (emendation) SUNDEVALL, Met. Nat. Av. Disp. Tent., 1872, 86.

*Microrhynchus* (not of Gloger, 1825) LESSON, L'Écho du Monde Sav., 10<sup>e</sup> an., ser. 2, viii, no. 5, July 16, 1843, col. 109. (Type, *Caprimulgus exilis* Lesson==*C. pruinus* Tschudi?)

*Microrhynchos* (emendation) LESSON, L'Écho du Monde Sav., 11<sup>e</sup> an., no. 39, May 19, 1844, 925; Compl. Œuvr. Buffon, xx, 1847, 259.

*Ramphoratus* BONAPARTE, Rivista Contemporanea, ix, Feb., 1857, 215. (Type, *Caprimulgus exilis* Lesson.)

Medium-sized Chordeilinae (length about 210–225 mm.), with tail decidedly more than half as long as wing, distinctly emarginate; tenth (outermost) primary equal to or longer than ninth, and nostrils open (the operculum small).

Bill very small, the distance from nostril to tip of maxilla equal to about one-fifth the length of commissure, the maxilla with a lateral curved channel. Nostril rather large, opening laterally, more or less triangular or subpyriform, longitudinal. Rictal bristles small and weak, very indistinct. Wing long and pointed, the tenth (outermost) primary longest or equal to ninth, exceeding distal secondaries by decidedly more than half the length of wing. Tail between one-half and three-fifths as long as wing, more or less deeply emarginate, the lateral pair of rectrices longest, the middle pair shortest. Tarsus equal to or very slightly longer than middle toe without claw, the upper half (more or less) feathered, except behind; outer toe, without claw, reaching nearly or quite to penultimate articulation of middle toe, the inner toe slightly longer; hallux, with claw, decidedly longer than basal phalanx of middle toe.

*Plumage and coloration.*—Plumage in general more compact, with less downy or velvety surface, the primaries and rectrices more rigid than in genera of the Caprimulginae; no special development of feathers on sides of occiput, on chest, nor elsewhere. Upper parts more or less mottled, marbled, or vermiculated (sometimes streaked); adult males with a white area on primaries, and with more or less of white on tail.

*Range.*—Temperate North and South America, Bahamas, and Greater Antilles. (About five species.)

As in the case of *Bubo virginianus*,<sup>a</sup> I have followed Mr. Oberholser in his treatment of the North and Middle American forms of *Chor-*

<sup>a</sup> See pages 736–754 of this volume.

*deiles*, having examined the same material. The two cases are precisely alike, it being merely a question of whether geographic variations be ignored altogether or extreme subdivision made, no middle course being satisfactory.

Mr. Oberholser has kindly allowed me the use of his measurements and notes.

KEY TO THE SPECIES AND SUBSPECIES OF CHORDEILES.

a. Outermost (tenth) primary not shorter than ninth, usually longer; white patch on primaries occupying five outer quills and anterior to tip of fourth quill (seventh from outside); secondaries, primary coverts, and basal portion of primaries not distinctly if at all spotted (usually plain dusky); lighter bars on under wing-coverts white, or, if buffy, narrower than the dusky interspaces. (*Chordeiles virginianus*.)

b. Larger (wing averaging more than 193 mm., tail averaging 108 mm. or more).

c. Darker, the upper parts with blackish predominating; under parts with dusky bars broader. (Eastern and northern North America, breeding north of Lower Austral Zone; South America, etc., in winter.)

*Chordeiles virginianus virginianus* (p. 562).

cc. Paler, the upper parts with lighter markings predominating, or at least equaling darker ones in extent; under parts with dusky bars narrower.

d. Larger (wing averaging 200 mm. in male, more than 193 in female; tail averaging more than 112 in both sexes).

e. Darker and less buffy. (Western United States, east, from Nevada and Utah northward, to Rocky Mts., northward to southeastern British Columbia and southern Alberta; southward to Nicaragua in migration.)

*Chordeiles virginianus hesperis* (p. 567).

cc. Paler and more buffy. (Southern portion of Great Plains and adjacent part of Rocky Mts., from central and northwestern Texas and north-eastern New Mexico to eastern Utah, Wyoming, and Nebraska; casual in Minnesota and Illinois.)

*Chordeiles virginianus howelli* (p. 570).

dd. Smaller (wing averaging less than 200 mm. in male, less than 190 in female; tail averaging less than 112 in both sexes).

e. Paler and grayer, with upper parts more finely variegated. (Northern portion of Great Plains, from northwestern Iowa, Nebraska, etc., to western Minnesota, North Dakota, and eastern Montana.)

*Chordeiles virginianus sennetti* (p. 568).

cc. Darker and much more buffy or ochraceous, with upper parts more coarsely variegated; secondaries, primary coverts, and basal portion of primaries frequently indistinctly spotted. (Southwestern United States, in west-central Texas, New Mexico, Arizona, and southwestern Colorado and contiguous parts of northern Mexico.)

*Chordeiles virginianus henryi* (p. 572).

bb. Smaller (wing averaging less than 185 mm., tail averaging not more than 105, usually considerably less).

c. Larger (wing averaging 180 mm. or more, tail averaging more than 101 mm.).

d. Pale, like *C. v. sennetti*. (Southern Texas and northern Tamaulipas; southward, in migration, to Costa Rica.)

*Chordeiles virginianus aserriensis* (p. 573).

dd. Dark, like *C. v. virginianus*. (Gulf States, from Florida to eastern Texas, northward to eastern North Carolina, southwestern Kentucky, and south-eastern Illinois.).....*Chordeiles virginianus chapmani* (p. 574).

cc. Smaller (wing averaging less than 175 mm., tail averaging less than 98 mm.).

d. Paler, with lighter markings on upper parts finer and paler buffy, slightly larger (wing averaging 170.2 in male, 173.2 in female). (Bahama Islands.)

***Chordeiles virginianus vicinus* (p. 575).**

dd. Darker, with lighter markings on upper parts coarser and more deeply buffy or ochraceous; slightly smaller (wing averaging 168 in male, 168.7 in female. (Greater Antilles.)..... ***Chordeiles virginianus minor* (p. 576).**

aa. Outermost (tenth) primary not longer than ninth, usually shorter; white patch on primaries occupying only four outer quills and situated more distally, usually opposite tip of fifth quill (sixth from outside), never anterior to tip of fourth (seventh) quill; secondaries, primary coverts, and proximal primaries (usually basal portion of distal primaries also) always spotted with cinnamon-buff; lighter bars on under wing-coverts cinnamon-buff, broader than the dusky bars. (*Chordeiles acutipennis*.)

b. Smaller (wing averaging less than 170 mm. in male, less than 165 mm. in female).

c. Smaller (wing averaging 163 in male, 160 in female; tail averaging 93.6 in male, 92.7 in female); markings on upper parts less strongly contrasted, dusky bars on under parts relatively broader, and white subterminal band on tail in male narrower. (South America.)

***Chordeiles acutipennis acutipennis* (extralimital).<sup>a</sup>**

cc. Larger (wing averaging 169.4 mm. in male, 162.1 mm. in female; tail averaging 99.1 in male, 94.4 in female); markings on upper parts more strongly contrasted, dusky bars on under parts averaging narrower, and white subterminal band on tail in male averaging broader. (Panama to southern Mexico.)..... ***Chordeiles acutipennis micromeris* (p. 577).**

bb. Larger (wing averaging more than 175 mm. in male, more than 168 mm. in female; tail averaging more than 107 mm. in male, more than 102 mm. in female).

c. Larger: Wing averaging 183.4 in male, 175 in female; tail averaging 111.6 in male, 106.1 in female. (Panama to southwestern United States, breeding from central Mexico northward.)... ***Chordeiles acutipennis texensis* (p. 581).**

cc. Smaller: Wing averaging 176.2 in male, 168.1 in female; tail averaging 107.1 in male, 102.3 in female. (Lower California.)

***Chordeiles acutipennis inferior* (p. 580).**

<sup>a</sup> *Caprimulgus acutipennis* Boddaert, Tabl. Pl. Enl., 1783, 46 (Guiana; based on *Crapaud-volant ou Tette-chevre de la Guiane* Daubenton, Pl. Enl., pl. 732, and *L'Engoulevent acutipenne de la Guyane* Buffon, Hist. Nat. Ois., ed. Montbeillard, xii, 264).—*Chordeiles acutipennis* Cassin, Proc. Ac. Nat. Sci. Phila., v, 1850, 187; Hartert, Cat. Birds Brit. Mus., xvi, 1892, 614.—[*Caprimulgus*] *acutus* Gmelin, Syst. Nat., i, pt. ii, 1789, 1031 (Guiana; based on *L'Engoulevent acutipenne de la Guyane* Buffon, etc.).—[*Chordeiles*] *acutus* Bonaparte, Consp. Av., i, 1850, 63.—*Caprimulgus semitorquatus* (not of Gmelin) Maximilian, Beitr. Naturg. Bras., iii, 1830, 330.—[*Caprimulgus*] *brasiliensis* Gmelin, Syst. Nat., i, pt. ii, 1789, 1073 (Brazil; based on *Le Tette-chèvre tacheté du Brésil* Brisson, Orn., ii, 483).—[*Chordeiles*] *brasiliensis* Bonaparte, Consp. Av., i, 1850, 63.—*Caprimulgus brasiliensis* Vieillot, Enc. Méth., 1823, 542.—[*Chordeiles*] *brasiliensis* Gray, Hand-list, i, 1869, 62, no. 703.—*Caprimulgus noitibo* Vieillot, Nouv. Dict. d'Hist. Nat., x, 1817, 241.—*Chordeiles labeculatus* Jardine, Ann. and Mag. N. H., xviii, 1846, 118 (Tobago; type now in coll. Brit. Mus.).—[*Chordeiles*] *labeculatus* Bonaparte, Consp. Av., i, 1850, 63.—[*Chordeiles*] *sapiti* Bonaparte, Consp. Av., i, 1850, 63 (South America; ex *Caprimulgus sapiti* Natterer, manuscript).—*Caprimulgus hirundinaceus* Spix, Av. Bras., ii, 1825, 2, pl. 3, fig. 1 (sylvia fl. Solimoëns).—[*Chordeiles*] *hirundinaceus* Gray, Hand-list, i, 1869, 62, no. 704.—*Caprimulgus stenopterus* Pelzeln, Orn. Bras., i Abth., 1868, 14, footnote (Bahia, Brazil).—[*Chordeiles*] *stenopterus* Gray, Hand-list, i, 1869, 62, no. 708.



## CHORDEILES VIRGINIANUS VIRGINIANUS (Gmelin).

## NIGHTHAWK.

*Adult male*.—Prevailing color of upper parts sooty black or olivaceous black, very faintly glossed with greenish, but this much broken by irregular spotting, marbling, and vermiculations of buff, pale buffy gray, and whitish, the black greatly predominating on pileum, where the sparse markings are irregularly spot-like and buff, and on back where the markings are smaller, in form of irregular narrow bars or vermiculations; hindneck with buff spots larger, more regularly guttate, forming indication of a broken collar; wing-coverts with rather large and numerous irregular spots of pale buffy grayish or dull grayish white, in addition to smaller irregular vermiculations and marblings, mostly of a more buffy hue; alula, primary coverts, primaries, and distal greater coverts dull grayish black, the last margined terminally with pale grayish, the primaries passing (more or less distinctly) into a more grayish hue at tips, the sixth, seventh, and eighth (sometimes ninth also)<sup>a</sup> crossed, a little anterior to the middle portion, by a broad, sharply defined, space of white, this involving the full width of both webs, as well as the shaft itself; tail dull grayish black or dusky, crossed by bands of paler (mostly buffy grayish and dull grayish white) marblings and spottings, and crossed by a more or less interrupted broader subterminal band of white; suborbital and auricular regions sooty black more or less distinctly streaked or longitudinally flecked with buffy, cinnamon, or rusty (sometimes nearly plain blackish), the malar region similar but more or less distinctly spotted with buffy; chin, upper and middle part of throat, and subauricular region immaculate white, forming a conspicuous A-shaped patch; lower throat dark sooty brown with triangular or guttate spots of brownish buff or cinnamon, the chest similar but with the spots dull whitish, the lower chest and upper breast with the markings more transverse or bar-like; rest of under parts broadly and regularly barred with dark sooty brown or sooty blackish and buffy white, the bars of the two colors of nearly equal width but the whitish ones averaging rather broader than the dusky ones, especially on more posterior parts, the under tail-coverts with the white interspaces much wider; under wing-coverts and axillars dark sooty brown or sooty blackish much more narrowly as well as less regularly barred with buffy or buffy whitish; under surface of remiges dull brownish slate, the inner webs of five outer primaries crossed by a broad band of white anterior to the middle portion; bill blackish, the basal portion of mandible pale brownish; iris blackish brown;

<sup>a</sup> More rarely, this white area is present, though of much less extent, on the tenth (outermost) primary.

legs and feet dusky; length (in flesh), 235–248 (242)<sup>a</sup>; wing, 184–208 (198); tail, 106–118 (110.9); exposed culmen, 6.10–7.5 (6.5); tarsus, 13.5–15.2 (14.4); middle toe, 13–15.5 (14.9).<sup>b</sup>

*Adult female*.—Similar to the adult male but without the white subterminal band on tail, white on primaries more restricted, lighter spotting, etc., of upper parts usually more conspicuous (giving a lighter colored cast to the general color of upper parts, under parts more strongly tinged with buffy, and white throat-patch usually more or less suffused with (sometimes entirely replaced by) buff; length (in flesh), 229–254 (241.5);<sup>c</sup> wing, 187.5–203 (196.5); tail, 105–118.5 (112); exposed culmen, 6.2–7.2 (6.7); tarsus, 13.8–15.5 (14.8); middle toe, 14–16.5 (15.5).<sup>d</sup>

*Young*.—Much like the adult female but without a well-defined (if any) white throat-patch, the chin and throat being buffy barred or transversely spotted with dusky—usually, however, with more or less of an indication of the throat patch of adults in the form of a less heavily spotted or barred (sometimes immaculate) buffy or whitish A-shaped area across middle of throat; general cast of upper parts decidedly paler, on account of more numerous and smaller pale markings, the wing-coverts especially having pale grayish or buffy grayish largely predominating, and barring of under parts less sharply defined.

Eastern and northern North America; breeding in the Upper Austral, Transition, Canadian, and southern portion of Hudsonian zones, north to southern Maine (Bath; Mount Desert Island; Calais; Somerset County; Island Falls), Nova Scotia (Barrington; Halifax; Sydney; Digby; Newport), western Newfoundland (Bay of Islands), southern Labrador (Natashquan), Quebec (Anticosti Island; Point de Monts; Natashquan River; Grand Falls; Lake Mistissini; Fauriel; Grosse Ile; Magdalen Islands), northern Ontario (Moose Factory; Brunswick House), and through Keewatin (Fort Churchill; Norway House; Robinson Portage; Oxford Lake; Knee Lake), Saskatchewan (Prince Albert; Quill Lake; Maple Creek), and Athabasca (Clearwater River) to Mackenzie (Fort Resolution; Fort Simpson; Fort Providence; Fort Wrigley; western part of Bear Lake; Mackenzie River below Fort Good Hope), and Yukon (La Pierre House; mouth of Tatchun River; White Horse Rapids; Caribou Crossing); west to edge of Great Plains, in Minnesota (Fort Snelling; Walker; St. Cloud; Waseka), southeastern South Dakota, eastern Nebraska (Omaha; Lincoln; Beatrice), eastern Kansas (Emporia; near Lawrence), etc., and through southern Manitoba (Carberry) and Alberta (Fort Chippewyan; Fort Smith; Banff; Athabasca Lake; Slave River,

<sup>a</sup> Six specimens.

<sup>c</sup> Nine specimens.

<sup>b</sup> Twelve specimens.

<sup>d</sup> Ten specimens.

below Peace River) to British Columbia (Lake Teslin; Telegraph Creek; Coast Range; Lund, on Malaspina Inlet; Comox, Errington, and Victoria, Vancouver Island; Sumas; Osoyo Lake; Sproats Landing), and northwestern Washington (Simiahmoo; Sinyakwateen Depot); southward to northern Arkansas (Pettigrew; Mammoth Spring), southern Missouri (Jasper County; Stone County; St. Louis County), south-central Illinois (Odin), central and southeastern Tennessee (Nashville; Chattanooga), north-central Georgia (Ellinjay; Young Harris), southwestern North Carolina (Asheville; Weaversville), and southern Virginia (Wythesville; Lynchburg; Newport News; Cape Charles; Cobbs Island); migrating southward through Gulf States and lower Mississippi Valley, eastern Colorado (Gunnison), Texas, and eastern Mexico to Bermudas, Cuba, Isle of Pines (Santa Fe, May 10), Jamaica (Spanishtown, Sept.), St. Bartholomew, Barbados, Costa Rica (Rio Sicsola, Sept. 24; Miravalles, May 25) Panamá (Calovévora, Verágua), and South America, where wintering from Colombia (Bogotá; Antioquia) and Venezuela (Orinoco Valley) southward to southern Brazil (Matto Grosso; São Paulo; Rio de Janeiro), Argentina (Tucumán; Córdoba; Gran Chaco; Barracas al Sud; Ysca Yacus, Santiago) and Paraguay (Lambaré); accidental northward to Melville Island, Arctic Ocean.

[*Caprimulgus*] *virginianus* GMELIN, Syst. Nat., i, pt. 2, 1789, 1028 (Virginia; based on *Caprimulgus virginianus* Brisson, Orn., ii, 477; *Caprimulgus minor americanus* Catesby, Nat. Hist. Carolina, iii, App., pl. 16; *Long-winged Goatsucker* Pennant, Arctic Zool., ii, 436, pl. 18; *Virginia Goatsucker* Latham, Synopsis Birds, ii, 595; etc. See especially Stejneger, Auk, ii, 1885, 178-180).—LATHAM, Index Orn., ii, 1790, 585.

*Caprimulgus virginianus* TEMMINCK, Cat. Syst., 1807, 136.—STEPHENS, Shaw's Gen. Zool., x, 1817, 153.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. 1, 1826, 62; Obs. Wilson's Am. Orn., 1826, [241]; Synopsis Birds U. S., 1828, 62.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 619; Water Birds, 1834, 609 (Great Bear Lake, Mackenzie).—AUDUBON, Orn. Biog., ii, 1834, 273, pl. 147; v, 1839, 406.—KOENIG-WARTHAUSEN, Journ. für Orn., 1868, 373.

[*Caprimulgus*] *virginianus* MAXIMILIAN, Journ. für Orn., 1858, 97, part (Pennsylvania).

*Caprimulgus (Chordeiles) virginianus* SWAINSON, Fauna Bor.-Am., ii, 1831, 337.

*Chordeiles virginianus* SWAINSON, Fauna Bor.-Am., ii, 1831, 496.—BONAPARTE, Geog. and Comp. List, 1838, 8.—AUDUBON, Synopsis, 1839, 32; Birds Am., oct. ed., i, 1840, 159, pl. 43.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 748.—JARDINE, Contr. Orn., 1848, 81 (Bermudas, numerous in Oct.).—HURDIS, Jardine's Contr. Orn., 1850, 7 (Bermudas, April, Oct.).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 186 (Philadelphia and Chester Co., Pennsylvania; Mexico; Nicaragua; Bogota, Colombia); Cat. Caprim. Mus. Ac. Nat. Sci. Phila., 1851, 8; Illustr. Birds Calif., Tex., etc., 1855, 238.—BREWER, North Am. Oölogy, i, 1857, 87, pl. 5, figs. 59, 60, 61 (eggs).—WILLIS, Ann. Rep. Smithsonian. Inst. for 1858 (1859), 287 (Bermudas).—MARTENS, Journ. für Orn., 1859, 216 (Bermudas).—SCLATER, Cat. Am. Birds, 1862, 279 (N. America); Proc. Zool. Soc. Lond., 1866, 133, part (monogr.).—SUNDEVALL, Oefv. K. Vet.-Ak. Förh., 1869, 600 (St. Bartholo-



mew).—COUES, Check List, 1873, no. 267 part.—BREWSTER, Ann. Lyc. N. Y., xi, 1875, 143 (Ritchie Co., West Virginia); Bull. Nutt. Orn. Club, iii, 1878, 178 (descr. young).—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 208 (Bermudas, Feb., April, Sept., Oct.; habits).—STEJNEGER, Auk, ii, 1885, 182 (crit. nomencl.).—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 242 (Natashquan, Labrador).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, (and 2d ed., 1895), no. 420.—CORY, Auk, iii, 1886, 340 (West Indian localities and references); Birds West Ind., 1889, 135; Cat. West Ind. Birds, 1892, 105, 143 (Cuba; Jamaica; Barbados).—FEILDEN, Ibis, 1889, 486 (Barbados).—RIDGWAY, Orn. Illinois, i, 1889, 369.—CANTWELL, Orn. and Ool., xv, 1890, 133 (e. Minnesota).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 140 (Ashcroft, Brit. Columbia; crit.).—FANNIN, Check List Birds Brit. Col., 1891, 29 (Brit. Columbia).—CLARKE (W. E.), Auk, vii, 1890, 322 (Ft. Churchill, Keewatin).—MACFARLANE, Proc. U. S. Nat. Mus., xiv, 1891, 438 (Clearwater R., Athabasca, breeding).—SCOTT, Auk, ix, 1892, 276 (Jamaica in migration).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 610, part (Ft. Simpson, Mackenzie).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, part.—GUNDLACH, Orn. Cubana, ed. 1895, 100.—BENDIRE, Life Hist. N. Am. Birds, (ii), 1895, 163, pl. 3, figs. 1, 2, 3 (eggs).—BISHOP, N. Am. Fauna, no. 19, 1900, 79 (Caribou Crossing to mouth of Tatchun R. and White Horse Rapids, Yukon Territory).—PREBLE, North Am. Fauna, no. 22, 1902, 113 (Norway House, Robinson Portage, Oxford Lake, Knee Lake, etc., Keewatin); no. 27, 1908, 389 (Mackenzie Valley, north to Ft. Good Hope).—BAILEY (Florence M.), Birds W. U. S., 1902, 226.—CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 272 (Barbados, Lesser Antilles).—TOWNSEND and ALLEN, Proc. Bost. Soc. N. H., xxxiii, 1907, 577 (s. Labrador).—BENT, Auk, xxv, 1908, 26 (Maple Creek, s. w. Saskatchewan, 1 spec., June 5, 1906).

(?) *Chordeiles virginianus* <sup>a</sup> SALVIN and SCLATER, Ibis, 1860, 275 (Coban, Guatemala).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Panama); 1879, 531 (Antioquia, Colombia; crit.).—SCLATER, Proc. Zool. Soc. Lond., 1866, 133 (Brazil).—SALVIN, Proc. Zool. Soc. Lond., 1870, 303 (Veragua, Panama).—BERLEPSCH, Journ. für Orn., 1887, 19 (Lambare, Paraguay; crit.), 120 (Paraguay).—SCLATER and HUDSON, Argentine Orn., ii, 1889, 13.—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 610, part (Panama; Bogota and Antioquia, Colombia; Rio Araguay, Brazil).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 125 (Chapada, Matto Grosso, s. w. Brazil).—HOLMBERG, Segundo Cent. Argentina, 1898, 521.—IHERING, Rev. Mus. Paulista, iii, 1899, 275 (São Paulo, s. Brazil); vi, 1904, 332 (Paraguay).—DABBENE, Orn. Argentina, 1910, 263 (Tucuman, Cordova; Chaco; Barracas al Sud, Buenos Aires; Entre Rios).

[*Chordeiles*] *virginianus* BONAPARTE, Consp. Av., i, 1850, 63.—GRAY, Hand-list, i, 1869, 61, no. 697.—COUES, Key N. Am. Birds, 1872, 181, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96, part.—CORY, List Birds West Ind., 1885, 16.—SHARPE, Hand-list, ii, 1900, 79.

*C[hordeiles] virginianus* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.

[*Chordeiles virginianus*] *a. virginianus* COUES, Birds Northwest, 1874, 263, part.

*Chordeiles virginianus virginianus* BANGS and ZAPPEY, Am. Nat., xxxix, April, 1905, 203 (Isle of Pines, Cuba, May 10).—WETMORE, Condor, xi, 1909, 159 (near Lawrence, Kansas).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 198.—ARNOLD, Auk, xxix, 1912, 76 (Newfoundland).—SWARTH, Univ. Calif. Pub. Zool., x., 1912, 39 (Alberni and Errington, Vancouver I.;

<sup>a</sup> Without examination of specimens it is of course impossible to determine which form of the species any of these citations refer to.

- habits; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 500 (Rio Sicsola and Miravalles, Costa Rica; crit.).
- (?) *Chordeiles virginianus virginianus* HARTERT and VENTURI, Novit. Zool., xvi, 1909, 225 (Barracas al Sud, Argentina).
- C[hordediles] virginianus* CABANIS and HEINE, Mus. Hein., iii, 1860, 86.
- [*Chordeiles*] *virginianus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 191.
- (?) *Chordeiles virginianus* KERR, Ibis, 1901, 228 (Gran Chaco, Paraguay).
- Caprimulgus popetue* VIEILLOT, Ois. Am. Sept., i, 1807, 56, pl. 24 (Nova Scotia); Nouv. Dict. d'Hist. Nat., x, 1817, 242.
- C[aprimulgus] popetue* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iv, pt. ii, 1825, 262; Obs. Wilson's Am. Orn., 1826, [121].
- Chordeiles popetue* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 151, part (Carlisle, Pennsylvania; St. Louis and Independence, Missouri; Kansas); Cat. N. Am. Birds, 1859, no. 114, part.—LAWRENCE, Ann. Lyc. N. Y., vii, 1860, 263 (Cuba; crit.); viii, 1866, 291 (vicinity of New York City).—ALBRECHT, Journ. für Orn., 1861, 205 (Cuba).—GUNDLACH, Journ. für Orn., 1874, 117 (Cuba).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 179 (s. Kansas).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 357, part.—BREWSTER, Proc. Bost. Soc. N. H., xii, 1883, 380 (Grand Entry I., Gulf of St. Lawrence).—STEARNS, Proc. U. S. Nat. Mus., vi, 1883, 117 (Natashquan, Labrador).—AGERSBORG, Auk, ii, 1885, 283 (s. e. South Dakota, transient).
- (?) *Chordeiles popetue* SALVIN, Proc. Zool. Soc. Lond., 1870, 203 (Calovevora, Veragua, Panama).—KOENIGSWALD, Journ. für Orn., 1896, 373 (São Paulo, s. Brazil).
- [*Chordeiles*] *popetue* GUNDLACH, Journ. für Orn., 1861, 330 (Cuba); Repert. Fisico-Nat. Cuba, i, 1866, 282.
- Chordediles popetue* COUES, Check List, 2d ed., 1882, no. 399.—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 236 (Point de Monts, Quebec, summer resident).
- C[hordediles] popetue* COUES, Key N. Am. Birds, 2d ed., 1884, 454.
- [*Chordeiles popetue*] *popetue* COUES, Auk, v, Jan., 1888, 37.
- Chordeiles popetue*, var. *popetue* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 401.
- Chordeiles popetue popetue* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 313.
- Caprimulgus americanus* (not of Linnæus) WILSON, Am. Orn., v, 1812, 65, pl. 40, figs. 1, 2 (type locality not stated, but probably Pennsylvania).
- [*Chordeiles*] *americanus* BONAPARTE, Consp. Av., i, 1850, 63.
- Chordeiles americanus* DE KAY, Zool. N. Y., ii, 1844, pl. 27, fig. 60.
- Ch[ordeiles] virginianus (typicus)* HARTERT, Tierreich. Podarg., Caprim., Macropt., 1897, 19.
- Chordeiles popetue* var. *henryi* (not *Chordeiles henryi* Cassin) NELSON, Bull. Nutt. Orn. Club, i, 1876, 40 (Waukegan, n. e. Illinois, breeding; crit.).
- [*Chordeiles popetue*.] Var. *henryi* NELSON, Bull. Essex Inst., viii, 1876, 114 (Waukegan, Illinois, breeding; crit.).
- Chordeiles virginianus henryi* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 357a, part; Orn. Illinois, i, 1889, 370 (Illinois; based on Nelson, as above).—KERMODE, Provincial Mus. Victoria, 1909, 51 (Vancouver I. and mainland w. of Cascade Mts., Brit. Columbia).
- (?) *Caprimulgus variegatus* VIEILLOT, Nouv. Dict. d'Hist. Nat., x, 1817, 238 (Paraguay).
- (?) *C[aprimulgus] jaspideus* MERREM, in Ersch und Gruber, Allgem. Enc. Wissensch. und Künste, sec. 1, xv, 1826, 148 (Paraguay).

## CHORDEILES VIRGINIANUS HESPERIS Grinnell.

## PACIFIC NIGHTHAWK.

Similar to *C. v. virginianus*, but adult male with general coloration lighter, the upper parts with the dusky ground color more brownish black, the lighter markings more numerous, especially on back, scapulars, proximal secondaries, and wing-coverts, the posterior under parts less tinged with buff and with the dark bars averaging narrower.

*Adult male*.—Length (before skinning), 221–260 (240.5);<sup>a</sup> wing, 183–211 (200); tail, 107–120 (112.9); exposed culmen, 6–8 (6.9); tarsus, 13.8–15.2 (14.3); middle toe, 14–15.5 (14.7).<sup>b</sup>

*Adult female*.—Length (before skinning), 232–241 (236.5);<sup>a</sup> wing, 187–203 (194.9); tail, 105–119 (112.2); exposed culmen, 6.1–8 (7); tarsus, 13–15.2 (14.5); middle toe, 14.2–16 (15.3).<sup>b</sup>

Pacific coast district and eastward to Rocky Mountains, from southern California, Nevada, and Utah northward to Washington (Fort Steilacoom; Aberdeen; Grays Harbor; Bellingham Bay; Puget Sound; Rockland), southeastern British Columbia (Trail), southern Alberta (Many Island Lake, near Walsh), and southwestern Saskatchewan (Indian Head; Maple Creek; Hay Creek; Big Stick Lake); eastward to central Montana (Bozeman; Great Falls; Milk River; Sun River; Johnson Lake; Cameron County; Gallatin County; Dawson County; Powell County; Corvallis; Bear Paw Mountains) and northeastern Wyoming (Upper Geyser Basin; Stinking Creek; Greybull; Saratoga), migrating southward through Colorado, New Mexico, Texas, Arizona, Mexico, etc., to Nicaragua (Rio Escondido, Oct. 28).

*Chordeiles virginianus* (not *Caprimulgus virginianus* Gmelin) NEWBERRY, Rep. Pacific R. R. Surv., iv, pt. iv, chap. ii, 1857, 78 (San Francisco, California, to Columbia R.).—COUES, Check List, 1873, no. 267, part.—MERRILL (J. C.), Auk, v, 1888, 256 (Ft. Klamath, Oregon).—BREWSTER, Auk, v, 1888, 256 (Ft. Klamath; crit.).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 26 (Los Angeles Co., rare migrant).

[*Chordeiles*] *virginianus* COUES, Key N. Am. Birds, 1872, 181, part.

[*Chordeiles virginianus*] *a. virginianus* COUES, Birds Northwest, 1874, 263, part.

(?) *Chordeiles virginianus virginianus* GRINNELL, Pacific Coast Avifauna, no. 3, 1902, 40 (California range).

*Chordeiles popetue* (not *Caprimulgus popetue* Vieillot) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 151, part (Fort Steilacoom, Washington; Cosumnes R. and Tulare Valley, California); Cat. N. Am. Birds, 1859, no. 114, part.—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 35, part (California).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, book ii, pt. iii, 1860, 166, part, at least (Puget Sound, Vancouver?, Fort Dallas, and Fort Steilacoom, Washington).—COOPER, Orn. Calif., 1870, 343 (excl. syn. part).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 169 (Ogden, Utah).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 427 (Soda Springs and Big Trees, California).

<sup>a</sup> Two specimens.

<sup>b</sup> Ten specimens.



- Chordeiles popetue* COUES, Check List, 2d ed., 1882, no. 399, part.  
*C[hordediles] popetue* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.  
*Chordeiles virginianus popetue* MEARNs, Bull. Nutt. Orn. Club, iv, 1879, 195 (Ft. Klamath, Oregon).  
*Chordeiles henryi* (not of Cassin) MERRIAM, Sixth An. Rep. U. S. Geol. Surv. Terr., 1873, 692 (Marsh Creek, etc., Idaho; Upper Geyser Basin, Wyoming).  
*Chordeiles popetue*, var. *henryi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 404, part, pl. 46, fig. 4.—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 8, part (Utah).  
*[Chordeiles] henryi* SHARPE, Hand-list, ii, 1900, 79, part.  
*Chordeiles popetue* . . .  $\beta$ . *henryi* RIDGWAY, Orn. Fortieth Parallel, 1877, 568, part (Truckee Valley and East Humboldt Mts., Nevada).  
*Chordeiles popetue henryi* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 11, 15 (Carson City and Truckee Valley, Nevada), 30 (Salt Lake Valley, Utah); Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 357, part.  
*C[hordeiles] popetue henryi* HENSHAW, Ann. Rep. U. S. Geol. Surv. W. 100th Merid. for 1879, 310 (California; Oregon; Washington).  
*[Chordeiles virginianus.]* Var. *henryi* COUES, Key N. Am. Birds, 1872, 181, part.  
*Chordeiles virginianus* . . . var. *henryi* COUES, Check List, 1874, no. 267a, part.  
*[Chordeiles virginianus] b. henryi* COUES, Birds Northwest, 1874, 264, part.  
*Chordeiles virginianus henryi* STEJNEGER, Auk, ii, April, 1885, 132, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895) no. 420a, part.—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon).—EVERMANN, Auk, iii, 1886, 180 (Ventura Co., California, breeding).—FANNIN, Check List Birds Brit. Col., 1891, 29 (Brit. Columbia).—PALMER (T. S.), Auk, ix, 1892, 309 (Grays Harbor, Washington).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 515, part (Rio Escondido, Nicaragua, Oct. 28).—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 40 (California range).—SAUNDERS, Auk, xxviii, 1911, 38 (Gallatin Co., Montana).—CAMERON, Auk, xxiv, 1907, 389 (Cameron and Dawson counties, Montana; habits).—EDSON, Auk, xxv, 1908, 434 (Bellingham Bay, Washington, summer resident).  
*C[hordeiles] virginianus henryi* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.  
*C[hordeiles] v[irginianus] henryi* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 227, part.  
*Chordediles popetue henryi* COUES, Check List, 2d ed., 1882, no. 400, part.  
*C[hordediles] p[opetue] henryi* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.  
*Chordeiles virginianus hesperis* GRINNELL (J.), Condor, vii, Nov., 1905, 170 (Bear Lake, San Bernardino Mts., California; coll. J. Grinnell); Univ. Calif. Pub. Zool., v, 1908, 67 (San Bernardino Mts., 4,500–9,000 ft.; habits; crit.).—RAY, Auk, xxiii, 1906, 414 (Merced, California).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 347; Check List, 3rd ed., 1910, 199.—TAYLOR, Univ. Calif. Pub. Zool., vii, 1912, 369 (Humboldt Co., Nevada; habits).  
*Chordeiles virginianus sennetti* (not of COUES) SAUNDERS, Condor, xiv, 1912, 27 (Gold Creek, Powell Co., s. w. Montana, Aug. 26).

### CHORDEILES VIRGINIANUS SENNETTI (Coues).

#### SENNETT'S NIGHTHAWK.

Similar to *C. v. hesperis*, but general aspect of upper parts still lighter and more grayish, resulting both from lighter shade of the darker markings and greater profusion and lighter color of the paler ones, which have much less of buffy intermixture; general aspect of under

parts also lighter, the markings on anterior portion more grayish, the bars on posterior portions narrower, sometimes interrupted.

*Adult male*.—Length (before skinning), 213–248 (232);<sup>a</sup> wing, 186–213 (198.3); tail, 101.5–112.5 (109.1); exposed culmen, 6–7.2 (6.9); tarsus, 13.5–15.8 (14.6); middle toe, 13.9–16 (15.3).<sup>b</sup>

*Adult female*.—Wing, 175–201 (189.5); tail, 102.5–115 (108); exposed culmen, 6–7.5 (6.5); tarsus, 13.8–15.3 (14.7); middle toe, 14–16 (14.9).<sup>b</sup>

Northern portion of Great Plains district, breeding from Nebraska (Thomas County; Antelope County) and northwestern Iowa (Sioux City; Dickinson County) northward through South Dakota (Huron; near Rosebud; Missouri River 40 miles above Fort Pierre; Fort Sisseton), North Dakota (Fort Union; Pembina; 50 miles west of Pembina Mountains; Fort Rice; Linton; Big Muddy Creek; Towner County; Devils Lake Indian Reservation; Pierce County; Rolette County; Nelson County; Souris River; Fort Berthold; etc.), western Minnesota (Lac qui Parle County; Grant County; Kimbrae), northeastern Wyoming (Uva), eastern Montana (Fort Keogh; Darnall's Ranch, Dawson County; Strater, Valley County), Assiniboia, and western Manitoba to southeastern Saskatchewan (Fort Carleton; Fort Pitt; Grand Rapids; Quill Lake; Prince Albert); casual in central Iowa (Dickinson County, June; 4 miles southeast of Boone, Oct. 27); migrating southward through Kansas (Burlington, October; near Lawrence, September), and eastern Colorado (Barr, Aug. 8), but not traced beyond.

*Chordeiles popetue* (not *Caprimulgus popetue* Vieillot) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 151, part (40 miles above Fort Pierre, South Dakota; Black Hills?).

*Chordiles virginianus* COUES, Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 613 (localities in North Dakota and eastern Montana; habits).—MCCHESNEY, Bull. U. S. Geol. and Geog. Surv. Terr., v, 1879, 81 (Ft. Sisseton, South Dakota).

[*Chordiles popetue*] *sennetti* COUES, Auk, v, Jan., 1888, 37 (50 miles west of Pembina, North Dakota; coll. U. S. Nat. Mus.).

*Chordeiles virginianus sennetti* CHAMBERLAIN, Syst. Index Canad. Birds, 1888, App. A., p. 14.—CHAPMAN, Auk, v, 1889, 396.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 18; Auk, xiv, 1897, 121 (Check List no. 420c); Check List, 3rd ed., 1910, 199.—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 554 (Manitoba; habits).—BISHOP, Auk, xiii, 1896, 135 (Towner and Rolette counties, North Dakota; crit.).—LANO, Auk, xv, 1898, 54 (Madison, Lac qui Parle Co., w. Minnesota, 2 specs., Aug.).—BARTSCH, Auk, xvi, 1899, 86 (Boone Co., Iowa, 2 specs.; no date given).—COBEAUX, Ottawa Nat., 1900, 28 (s. Saskatchewan, summer resident).—ANDERSON, Proc. Davenp. Ac. Sci., xi, 1907, 281 (Boone, Iowa, 1 spec.).—BENT, Auk, xxv, 1908, 27 (s. w. Saskatchewan).—WETMORE, Condor, xi, 1909, 159 (near Lawrence, Kansas, Sept.).

<sup>a</sup> Four specimens.

<sup>b</sup> Ten specimens.

- C[hordeiles] v[irginianus] sennetti* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 228.
- [*Chordeiles*] *sennetti* SHARPE, Hand-list, ii, 1900, 79.
- Chordeiles henryi* (not of Cassin) BLAKISTON, Ibis, 1863, 55 (Ft. Carlton and Ft. Pitt, Saskatchewan; habits; descr. eggs).
- Chordeiles popetue* var. *henryi* ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 62 (North Dakota; e. Montana).
- Chordeiles popetue henryi* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 357, part.—HOFFMAN, Proc. Bost. Soc. N. H., xxi, 1882, 401 (Ft. Berthold, North Dakota).
- Chordeiles virginianus henryi* GRINNELL (G. B.), Ludlow's Rep. Recon., 1876, 80 (plains of e. Montana).—STEJNEGER, Auk, ii, 1885, 182, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 420a, part.—SETON, Auk, iii, 1886, 156 (w. Manitoba, summer resident).—CANTWELL, Orn. and Ool., xv, 1890, 133 (w. Minnesota, to exclusion of *C. v. virginianus*).—NUTTING, Bull. Labr. N. H. Univ. Iowa, 1893, 271 (Grand Rapids, lower Saskatchewan R.).—THORNE, Auk, xii, 1895, 215 (Ft. Keogh, e. Montana, breeding).—ANDERSON, Proc. Davenport Ac. Sci., xi, 1907, 281 (Dickinson and Johnson counties, Iowa).—VISHER, Auk, xxvi, 1909, 148 (w. South Dakota).—STANSILL, Auk, xxvi, 1909, 395 (centr. Alberta, breeding).—FERRY, Auk, xxvii, 1910, 199 (Quill Lake and Prince Albert, Saskatchewan).
- C[hordeiles] virginianus henryi* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.
- C[hordeiles] v[irginianus] henryi* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 267, part.
- Ch[ordeiles] virginianus henryi* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 19, part.
- [*Chordeiles*] *henryi* SHARPE, Hand-list, ii, 1900, 79, part.
- Chordediles popetue henryi* COUES, Check List, 2d ed., 1882, no. 400, part.
- C[hordediles] p[opetue] henryi* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.

### CHORDEILES VIRGINIANUS HOWELLI Oberholser.

#### HOWELL'S NIGHTHAWK.

Resembling *C. v. sennetti* but adult male with general aspect of upper parts more ochraceous, the darker markings more brownish dusky and the paler ones more buffy or ochraceous; posterior under parts more buffy, the darker markings of anterior portions more brownish.

*Adult male*.—Length (before skinning), 235;<sup>a</sup> wing, 192.5–211 (200); tail, 105–121 (112.3); exposed culmen, 5.9–7 (6.3); tarsus, 13–15.3 (14.3); middle toe, 14.2–15.5 (14.9).<sup>b</sup>

*Adult female*.—Length (before skinning), 228.6–254 (239.3);<sup>c</sup> wing, 185–203.5 (193.4); tail, 104–122.5 (112.8); exposed culmen, 6.5–7.2 (6.9); tarsus, 13–14.8 (14.2); middle toe, 14.6–16 (15.3).<sup>b</sup>

More southern portion of Great Plains and central Rocky Mountain districts of United States, in Wyoming (Fort Bridger; Laramie River; Laramie Peak; Greybull; La Bonte River; Riverside; Bridger Pass; Germania; Bitter Creek; Pacific Springs; Black Hills; etc.), south-

<sup>a</sup> One specimen.

<sup>b</sup> Ten specimens.

<sup>c</sup> Three specimens.



western Nebraska, middle and western Kansas (Republican River; 70 miles west of Fort Riley; Fort Hays; Turkey Creek; Cairo), Oklahoma (Antelope Hills, 150 miles west of Fort Cobb; Lawton), central and northwestern Texas (Henrietta; Mobeetie; Lipscomb; Giddings; Bonham; Lampasas; Hereford; Navarro County; Lamb County; etc.), northeastern New Mexico (Cuervo; Sierra Grande), Colorado (Loveland; Rio Grande; Colorado Springs; Pueblo; Barr; Wray; Denver; South Park; Grand Junction; Twin Lakes; etc.), and eastern and central Utah (Parleys Park, Wahsatch Mountains; Uintah Mountains); casual in southwestern Minnesota (Grant County, spring, 1877) and western Illinois (Warsaw, May 20, 1884); migrating southward as far as eastern Nicaragua (Rio Escondido, Sept. 17).

*Chordeiles popetue* (not *Caprimulgus popetue* Vieillot) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 151, part (west of Fort Riley, Kansas; Bridger Pass and Fort Laramie, and Black Hills, Wyoming); Cat. N. Am. Birds, 1859, no. 114, part.—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 139 (w. Kansas), 151 (Colorado), 158 (South Park, Colorado).—AIKEN, Proc. Bost. Soc. N. H., xv, 1872, 206 (e. Colorado).—OGILBY, Sci. Proc. Roy. Dublin Soc., iii, 1882, 57 (Navarro Co., Texas, summer resident; habits).

*Chordeiles henryi* (not of Cassin) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 922 (Fort Bridger, Wyoming; crit.).—STEVENSON, Prelim. Rep. U. S. Geol. Surv., 1871, 463 (Laramie Peak and Pacific Springs, Wyoming).

[*Chordeiles*] *henryi* SHARPE, Hand-list, ii, 1900, 79, part.

[*Chordeiles virginianus*.] Var. *henryi* COUES, Key N. Am. Birds, 1872, 181, part.

*Chordeiles virginianus* . . . var. *henryi* COUES, Check List, 1873, no. 267a, part.

[*Chordeiles virginianus*] b. *henryi* COUES, Birds Northwest, 1874, 264, part.

*Chordeiles virginianus henryi* STEJNEGER, Auk, ii, April, 1885, 182, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 420a, part; 3rd ed., 1910, 198, part.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 515, part (Rio Escondido, Nicaragua, Sept. 17).—BENDIRE, Life Hist. N. Am. Birds, (ii), 1895, 167, part.—COOKE, Bull. Col. Agric. Coll., no. 37, 1897, 85 (breeding up to 11,000 ft.).—HERSEY and ROCKWELL, Condor, xi, 1909, 118 (Barr Lake district, Colorado).—(?) WETMORE, Condor, xi, 1909, 159 (near Lawrence, Kansas, 3 specs.).—HENDERSON, Univ. Colo. Stud. Zool., vi, 1909, 232 (Colorado, up to 10,000 ft.).—WARREN (E. R.), Condor, xiv, 1912, 94, figs. 36, 37, 38 (north-central Colorado; habits).

C[*hordeiles*] *virginianus henryi* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.

Ch[*ordeiles*] *virginianus henryi* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 19, part.

C[*hordeiles*] v[*irginianus*] *henryi* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 227, part.

[*Chordeiles popetue*] var. *henryi* ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 179 (middle Kansas to Utah; Colorado, up to 12,000 ft.).

*Chordeiles popetue* . . . var. *henryi* RIDGWAY, Bull. Essex Inst., v, Nov., 1873, 185 (Colorado).—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 8, part (mts. of Utah, breeding up to 7,000 ft.).

*Chordeiles virginianus*, var. *henryi* SCOTT, Bull. Nutt. Orn. Club, iv, 1879, 95 (Twin Lakes, Colorado; descr. eggs).

*Chordeiles popetue*, var. *henryi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 404, part.

*Chordeiles popetue* . . .  $\beta$ . *henryi* RIDGWAY, Orn. Fortieth Parallel, 1877, 568, part (Parleys Park and Uintah Mts., Utah); Field and Forest, ii, 1877, 209 (Colorado).

*Chordeiles popetue henryi* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 357*b*, part.—DREW, Auk, ii, 1885, 17 (Colorado, breeding up to 11,000 ft.).—BECKHAM, Auk, ii, 1885, 143 (Pueblo, Colorado).

[*Chordiles popetue*] *henryi* COUES, Auk, v, 1888, 37, part.

*Chordediles popetue henryi* COUES, Check List, 2d ed., 1882, no. 400, part.—ALLEN and BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 196 (Colorado Springs, Colorado).

[*Chordediles*] *p[opetue] henryi* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.

*Chordiles popetue henryi* DREW, Bull. Nutt. Orn. Club, vi, 1881, 140 (San Juan Co., Colorado).

*Chordeiles virginianus* (not *Caprimulgus virginianus* Gmelin) McCAULEY, Bull. U. S. Geol. and Geog. Surv. Terr., iii, 1877, 676 (Red R., n. Texas; habits; crit.).

*Chordeiles virginianus howelli* OBERHOLSER, Bull. 86, U. S. Nat. Mus., 1914, 57.

### CHORDEILES VIRGINIANUS HENRYI (Cassin).

#### WESTERN NIGHTHAWK.

Resembling *C. v. howelli* but general aspect of upper parts decidedly darker, the darker markings more blackish, the paler ones more ochraceous or tawny and also larger or coarser; under parts more strongly buffy posteriorly, more or less tinged or suffused with tawny anteriorly.

*Adult male*.—Length (before skinning), 229–243 (236); <sup>a</sup> wing, 188–209.5 (199.7); tail, 104–116.5 (111.1); exposed culmen, 6.5–7.5 (7); tarsus, 13.9–15.8 (14.6); middle toe, 14–16.5 (15).<sup>b</sup>

*Adult female*.—Length (before skinning), 222–241 (232); <sup>c</sup> wing, 182–198 (189.5); tail, 102.5–117.5 (110); exposed culmen, 6–7.5 (6.6); tarsus, 12.5–14.8 (14.1); middle toe, 13.2–16 (14.7).<sup>d</sup>

More southern portions of Rocky Mountain district and adjacent higher plains, in southwestern Colorado (Montrose), New Mexico (Hachita; Santa Rosa; Capitán Mountains; crossing of Rio Pecos; east side of San Luis Mountains; Zuñi Mountains; Copperton; Taos; Fort Webster; Roswell; Glorieta; etc.), west-central Texas (Paisano; Pecos City; Rio Mimbres; Fort Stockton; Fort Chadbourne; San Antonio; Fort Clark; etc.), and Arizona (Navajo County; San Francisco Mountain; Fort Verde; Flagstaff; Gila River; Hualapai Mountains; Fort Huachuca; Huachuca Mountains at 9,000 feet; Santa Rita Mountains; etc.) and southward (breeding) to Chihuahua (Babicora), and Sonora (Nogales); in migration southward to Jalisco (Guadalajara) and Tamaulipas (Montelunga, April 30; Victoria, April 23).

*Chordeiles henryi* CASSIN, Illustr. Birds Calif., Tex., etc., 1855, 239 (Fort Webster, New Mexico; type in coll. U. S. Nat. Mus.).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 153 (Rio Grande Valley, crossing of Rio Pecos, Rio Mimbres, and Ft. Chadbourne, Texas); ed. 1860 (Birds N. Am.), atlas, pl. 17; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 7, pl. 17 (Los Nogales, Sonora); Cat. N. Am. Birds, 1859, no. 115, part.—SCLATER, Proc. Zool. Soc. Lond., 1866, 133 (monogr.); Journ. für Orn., 1867, 263.—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 58 (Ft. Whipple, Arizona; crit.).

<sup>a</sup> Ten specimens.

<sup>b</sup> Eleven specimens.

<sup>c</sup> Six specimens.

<sup>d</sup> Twelve specimens.

[*Chordeiles*] *henryi* SHARPE, Hand-list, ii, 1900, 79, part.

[*Chordeiles virginianus*.] Var. *henryi* COUES, Key N. Am. Birds, 1872, 181, part.

*Chordeiles virginianus* . . . var. *henryi* COUES, Check List, 1873, no. 267a, part.

[*Chordeiles virginianus*] b. *henryi* COUES, Birds Northwest, 1874, 264, part.

*Chordeiles virginianus henryi* STEJNEGER, Auk, ii, April, 1885, 182, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 420a, part; 3d ed., 1910, 198, part.—(?) HASBROUCK, Auk, vi, 1889, 239 (Eastland Co., Texas).—MEARNS, Auk, vii, 1890, 254 (Ft. Verde, Flagstaff, etc., Arizona; habits).—ATTWATER, Auk, ix, 1892, 235 (San Antonio, Texas, summer resident; crit.).—BENDIRE, Life Hist. N. Am. Birds, (ii), 1895, 167, part, pl. 3, fig. 4 (egg).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 15 (Huachuca Mts., Arizona; habits).

*C[hordeiles] v[irginianus] henryi* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 227, part.

*Chordeiles popetue* . . . var. *henryi* HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 128 (Gila R., Arizona); Zool. Exp. W. 100th Merid., 1875, 367, part (Gila R., Arizona).

*Chordeiles popetue*, var. *henryi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 404, part.

*Chordeiles popetue* . . . β. *henryi* RIDGWAY, Orn. Fortieth Parallel, 1877, 568, part (in synonymy).

*Chordeiles popetue henryi* RIDGWAY, Proc. U. S. Nat. Mus. iii, Aug. 24, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 357, part.

*Chordeiles virginianus* (not *Caprimulgus virginianus* Gmelin) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 396, part.

*Chordediles popetue henryi* COUES, Check List, 2d ed., 1882, no. 400, part.

*C[hordediles] p[opetue] henryi* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.

### CHORDEILES VIRGINIANUS ASERRIENSIS Cherrie.

#### ASERRÍ NIGHTHAWK.

Similar in coloration to *C. v. sennetti*, but much smaller, and general aspect more buffy or ochraceous.

*Adult male*.—Length (before skinning), 223–240 (232);<sup>a</sup> wing, 179–188 (183.7); tail, 94.5–105 (101.1); exposed culmen, 6–7.9 (6.7); tarsus, 13.8–15.1 (14.5); middle toe, 13–14.8 (13.9).<sup>b</sup>

*Adult female*.—Wing, 179–185.5 (182.7); tail, 98.3–106 (102.6); exposed culmen, 6.3–7.5 (6.9); tarsus, 13.5–14.8 (14.2); middle toe, 14–15.5 (14.4).<sup>b</sup>

Southern Texas (Cameron, Nueces, Refugio, Bee, Wharton, Bexar, Edwards, and Kinney counties), and northern Tamaulipas (Matamoros); migrating southward as far as Costa Rica (Aserrí, near San José, Nov. 2).

*Chordeiles henryi* (not of Cassin) DRESSER, Ibis, 1865, 476 (Matamoros, Tamaulipas).

*Chordeiles popetue* var. *henryi* MERRILL, Proc. U. S. Nat. Mus., i, 1878, 146 (Ft. Brown, Texas, breeding).

*Chordeiles popetue henryi* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, part; Nom. N. Am. Birds, 1881, no. 357, part.

*Chordediles popetue henryi* COUES Check List, 2d ed., 1882, no. 400, part.

*C[hordediles] p[opetue] henryi* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.

<sup>a</sup> One specimen.

<sup>b</sup> Ten specimens.



*Chordeiles virginianus henryi* STEJNEGER, Auk, ii, 1885, 182, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 420a, part; 3d ed., 1910, 198, part.—RHOADS, Proc. Ac. Nat. Sci. Phila., 1892, 107 (Corpus Christi, Texas).

*C[hordeiles] v[irginianus] henryi* BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 227, part.

*[Chordeiles] henryi* SHARPE, Hand-list, ii, 1900, 79, part.

*Chordeiles virginianus aserriensis* CHERRIE, Auk, xiii, April, 1896, 136 (San Jose, Costa Rica; coll. G. K. Cherrie).—OBERHOLSER, Bull. 86, U. S. Nat. Mus., 1914, 71.

*Ch[ordeiles] virginianus aserriensis* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 99.

*[Chordeiles] aserriensis* SHARPE, Hand-list, ii, 1900, 79 (Costa Rica; Nicaragua).

*Chordeiles virginianus* (not *Caprimulgus virginianus* Gmelin) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 396, part.

### CHORDEILES VIRGINIANUS CHAPMANI (Coues).

#### FLORIDA NIGHTHAWK.

Similar in coloration to *C. v. virginianus* but decidedly smaller.

*Adult male*.—Length (before skinning), 223–232 (227)<sup>a</sup>; wing, 178–192 (184.1); tail, 99–110.5 (105); exposed culmen, 4.8–7 (6.3); tarsus, 12.5–15.5 (13.9); middle toe, 13–15.8 (14.2).<sup>b</sup>

*Adult female*.—Length (before skinning), 210–235 (223)<sup>c</sup>; wing, 172.5–184.5 (179.4); tail, 99–108.5 (103.2); exposed culmen, 5–7.5 (6.3); tarsus, 13.2–15 (14); middle toe, 13.8–15.8 (14.4).<sup>d</sup>

Southeastern United States, breeding from southern Florida and along Gulf coast to eastern Texas (Bowie County; Galveston Island; Hardin County; Sabine County) and northward to central Arkansas (Stuttgart; Delight),<sup>e</sup> southeastern Illinois (Mount Carmel), southwestern Kentucky (Hickman), central Alabama (Coosada; Greensboro), and middle and eastern North Carolina (Raleigh; Fort Macon); migrates southward through Yucatan, Nicaragua, and Costa Rica (Rio Sicsola, Sept. 24 and 26; Miravalles, May 27), wintering in South America, from Colombia (40 miles offshore 200 miles from Panama) as far southward as Uruguay (Concepción), northern Argentina (Ysca Yacu, Province of Santiago), and west-central Brazil (Chapada, Matto Grosso).

*Chordeiles popetue* (not *Caprimulgus popetue* Vieillot) MERRIAM, Am. Nat., viii, 1874, 88 (St. Johns and Ocklawaha rivers, Florida, breeding).

*Chordeiles popetue*, var. *minor* (not *Chordeiles minor* Cabanis) BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, iii, 1874, 520 (Miami, Florida; not of vol. ii, 400).

*Chordeiles popetue minor* SMITH (G.), Bull. Nutt. Orn. Club, v, Jan., 1880, 54 (Homosassa R., Florida).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188, 219; Nom. N. Am. Birds, 1881, no. 357b.

*Chordediles popetue minor* COUES, Check List, 2d ed., 1882, no. 401.

*C[hordediles] p[opetue] minor* COUES, Key N. Am. Birds, 2d ed., 1884, 454.

<sup>a</sup> Ten specimens.

<sup>b</sup> Fourteen specimens.

<sup>c</sup> Eleven specimens.

<sup>a</sup> Two specimens.

<sup>e</sup> Probably also to southeastern Missouri.

*Chordeiles virginianus minor* STEJNEGER, Auk, ii, April, 1885, 182, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 420*b*, part.

*C[hordeiles] virginianus minor* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.

*[Chordeiles popetue] chapmani* COUES, Auk, v, Jan., 1888, 37 (Gainesville, Florida, coll. Frank M. Chapman; ex Sennett, manuscript).

*Chordeiles virginianus chapmani* SCOTT, Auk, v, April, 1888, 186 (Tarpon Springs, Florida; descr. eggs and downy young); vi, 1889, 252 (Tarpon Springs, Punta Rassa, and Key West, Florida); vii, 1890, 310 (Dry Tortugas, Florida, April); ix, 1892, 212 (Caloosahatchie R., Florida, breeding).—CHAPMAN, Auk, v, 1888, 272 (Gainesville, Florida), 396.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 22; Abridged Check List, 1889, 37; Check List, 2d ed., 1895, no. 420*b*; 3rd ed., 1910, 199.—WAYNE, Auk, x, 1893, 337 (Suwanee R., n. w. Florida, April 5); xii, 1895, 365 (Aucilla R., n. w. Florida, breeding).—BENDIRE, Life Hist. N. Am. Birds, (ii), 1895, 170, pl. 3, figs. 5, 6 (eggs).

*C[hordeiles] virginianus chapmani* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 598.

*[Chordeiles virginianus.]* Subsp.  $\beta$ . *Chordeiles chapmani* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 613.

*Ch[ordeiles] virginianus chapmani* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 19.

*[Chordeiles] chapmani* SHARPE, Hand-list, ii, 1900, 79.

*Chordeiles virginianus* (not *Caprimulgus virginianus* Gmelin) BARROWS, Auk, i, 1884, 24 (Concepcion, Uruguay).—COOMBS, Auk, ix, 1892, 205 (Louisiana, breeding).—BEYER, Proc. La. Soc. Nat. for 1897-99 (1900), 103 (Louisiana, breeding).—WILLIAMS (R. W.), Auk, xxi, 1904, 456 (Leon Co., n. w. Florida, breeding; habits).—ALLISON, Auk, xxi, 1904, 478 (Baton Rouge Parish, Louisiana, breeding).—STOCKARD, Auk, xxii, 1905, 156 (breeding habits in Mississippi).

### CHORDEILES VIRGINIANUS VICINUS Riley.

#### BAHAMA NIGHTHAWK.

Similar to *C. v. chapmani* but wing and tail decidedly shorter, general coloration of upper parts lighter, and posterior under parts more strongly tinged with buff.

*Adult male*.—Wing, 162.5-183 (170.2); tail, 92-103 (96.8); exposed culmen, 6.1-7.8 (6.7); tarsus, 13-14.8 (13.4); middle toe, 13-15 (13.9).<sup>a</sup>

*Adult female*.—Wing, 160.5-184.5 (173.2); tail, 91-102.5 (97.7); exposed culmen, 6.1-7.5 (6.7); tarsus, 12.5-14.8 (13.4); middle toe, 13-15 (14.1).<sup>a</sup>

Bahama Islands (Abaco; Abaco Keys; Great Bahama; Andros; South Andros; Great Inagua; Acklin Island; Watling Island; Eleuthera; Fortune Island; Grassy Cay; Long Island; Moraine Cay; New Providence; Stranger Cay; Sugar Loaf Cay); winter range unknown.

*Chordeiles popetue* (not *Caprimulgus popetue* Vieillot) BRYANT, Proc. Bost. Soc. N. H., vii, 1859, 108 (Bahamas, summer resident).—ALBRECHT, Journ. für Orn., 1861, 52 (Bahamas).

*Chordeiles minor* (not *Chordediles minor* Cabanis) CORY, Birds Bahama Is., 1880, 106 (Inagua); Auk, iii, 1886, 340, part (Bahamas); viii, 1891, 350 (Great Bahama; Abaco); Birds West Ind., 1889, 135, part; Cat. West Ind. Birds,

<sup>a</sup> Ten specimens.

1892, 105, part (Great Bahama, Abaco, New Providence, Andros, Fortune, Acklin, and Great Inagua islands, Bahamas).—NORTHROP, Auk, viii, 1891, 72 (Andros I.; habits).—BONHOTE, Ibis, 1899, 514 (New Providence); 1903, 292 (Andros I.; habits).—BANGS, Auk, xvii, 1900, 288 (Nassau, New Providence).

[*Chordeiles*] *minor* CORY, List Birds West Ind., 1885, 16, part (Bahamas).

*Chordeiles virginianus vicinus* RILEY, Auk, xx, Oct., 1903, 432 (Long Island, Bahamas; coll. U. S. Nat. Mus.); xxii, 1905, 355.—ALLEN, (G. M.), Auk, xxii, 1905, 126 (New Providence; Moraine Cay; Great Bahama).—WORTHINGTON, Ann. Carnegie Mus., vii, 1911, 455 (Andros and Abaco islands).

### CHORDEILES VIRGINIANUS MINOR (Cabanis).

#### CUBAN NIGHTHAWK.<sup>a</sup>

Similar to *C. v. vicinus* but wing and tail shorter and coloration darker; lighter markings of upper parts coarser, more ochraceous or tawny, and under parts more buffy, the posterior portions strongly so.

*Adult male*.—Wing, 159–174 (168); tail 89–97.5 (93.5); exposed culmen, 6.1–8 (6.6); tarsus, 12.5–14.1 (13.4); middle toe, 13–14.2 (13.9).<sup>a</sup>

*Adult female*.—Length (before skinning), 218;<sup>b</sup> wing, 160–174.5 (168.7); tail, 89.5–103 (95.3); exposed culmen, 6–7 (6.7); tarsus, 12–14.1 (13.3); middle toe, 13.1–14.9 (13.9).<sup>c</sup>

Cuba (including Isle of Pines), Jamaica, Haiti, and Porto Rico, Greater Antilles.

*Chordeiles virginianus* (not *Caprimulgus virginianus* Gmelin) GOSSE, Birds Jamaica, 1847, 33.—LEMBEYE, Aves de la Isla de Cuba, 1850, 51, pl. 4, fig. 3 (in part, at least).

*Chordeiles minor* CABANIS, Journ. für Orn., iv, Jan., 1856, 5 (Cuba).—GUNDLACH, Journ. für Orn., 1861, 411 (crit.).

*C[hordeiles] minor* CABANIS, Mus. Hein., iii, 1860, 86 (Cuba).—NEWTON (A. and E.), Handb. Jamaica, 1881, 109 (Jamaica).

[*Chordeiles*] *minor* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 191 (Cuba).

*Chordeiles minor* LAWRENCE, Ann. Lyc. N. Y., vii, 1860, 262 (Cuba; synonymy; crit.).—SCLATER, Proc. Zool. Soc. Lond., 1861, 77 (Jamaica; crit.); 1866, 133 (monogr.); Cat. Am. Birds, 1862, 279 (Jamaica); Journ. für Orn., 1867, 263; Ibis, 1867, 107 (Trinidad; crit.); Rev. List Birds Jamaica, 1910, 10.—ALBRECHT, Journ. für Orn., 1861, 204 (Cuba); 1862, 199 (Jamaica).—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 286 (Jamaica).—GUNDLACH, Journ. für Orn., 1874, 117 (Cuba; habits), 311 (Porto Rico); 1878, 160 (Porto Rico), 172 (Porto Rico; crit.).—CORY, Birds Haiti and San Dom., 1885, 85; Auk, iii, 1886, 340, part; Birds West Ind., 1889, 135, part; Cat. West. Ind. Birds, 1892, 105, part (Cuba; Isle of Pines; Jamaica; Haiti).—SCOTT, Auk, ix, 1892, 276 (Jamaica, April–Oct.).—FIELD, Auk, xi, 1894, 125 (Port Henderson, Jamaica).—CHRISTY, Ibis, 1897, 328 (La Vega, Santo Domingo; habits).—VERRILL (A. E. and A. H.), Proc. Ac. Nat. Sci. Phila., 1909, 360 (Santo Domingo).

[*Chordeiles*] *minor* GUNDLACH, Journ. für Orn., 1861, 330 (Cuba).—GRAY, Hand-list, i, 1869, 61, no. 701.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96 (Jamaica).—CORY, List Birds West Ind., 1885, 16, part.—SHARPE, Hand-list, ii, 1900, 79.

<sup>a</sup> Ten specimens.

<sup>b</sup> One specimen.

<sup>c</sup> Nine specimens.



[*Chordeiles popetue*] var. *minor* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 400.

*Chordeiles popetue minor* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 313.

*Chordeiles virginianus minor* STEJNEGER, Auk, ii, April, 1885, 182, part.—BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 203 (Isle of Pines, resident; crit.).

[*Chordeiles*] *virginianus minor* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.

*Ch[ordeiles] virginianus minor* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 19.

*Caprimulgus minor* KOENIG-WARTHAUSEN, Journ. für Orn., 1868, 375 (descr. eggs).

*Chordeiles gundlachii* LAWRENCE, Ann. Lyc. N. Y., vi, 1856, 165 (Cardenas, Cuba; coll. G. N. Lawrence).

*Chordeiles gundlachi* BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306 (Cuba).

### CHORDEILES ACUTIPENNIS MICROMERIS Oberholser.

#### YUCATAN NIGHTHAWK.

Similar to *C. a. acutipennis*<sup>a</sup> but averaging decidedly larger, with markings of upper parts larger and more strongly contrasted, pileum with more of unbroken dusky, dark bars on under parts relatively narrower, and white subterminal band of tail (in adult male) broader.

*Adult male*.—Prevailing color of pileum dark sooty brown or sooty black, this to a large extent uniform or unbroken on surface, but on concealed portion of the feathers spotted and barred with dull buff or pale grayish buffy, similar but smaller markings appearing here and there on edges of exposed portion of some of the feathers; superciliary region finely and irregularly spotted and vermiculated with blackish and pale buffy grayish to grayish white, the occiput similar but with the dusky markings rather coarser; back, rump, and upper tail-coverts coarsely vermiculated with dusky and pale buffy grayish, the feathers with median streaks, more or less broad, of blackish; scapulars similar but with outer webs mostly, or in large part, buff or cinnamon-buff, forming large, irregular spots; lesser wing-coverts dusky with small spots or flecks of buffy; middle coverts (sometimes greater coverts also) with a large terminal spot of buffy on outer webs, forming one or more series of large, roundish spots across wing; greater coverts (especially proximal ones) and proximal secondaries coarsely vermiculated with dusky on a pale buffy-grayish or dull whitish ground, and with an irregular mesial, acuminate streak of blackish; alulæ, primary coverts, distal secondaries, and primaries dark sooty brown or sooty blackish, the last more grayish terminally, the four outermost primaries crossed, at middle portion, by a broad, sharply defined band of white, involving both webs and (except sometimes on outermost primary) shaft also; proximal primaries and distal secondaries irregularly spotted on outer webs with orange-cinnamon or tawny, the primary coverts and alulæ with a greater or less number of small spots of the same, sometimes, however, concealed in the closed wing; middle pair of rectrices light brownish gray, broken,

<sup>a</sup> See p. 561.

more or less, by dusky marbling and crossed by several irregular oblique bars (in "herring-bone" pattern) of uniform dusky; other rectrices dark sooty brown or sooty blackish crossed near end by an interrupted white subterminal band, preceding which are large, irregular, broken spots of pale grayish buffy; malar, suborbital, and auricular regions sooty blackish, the first and second spotted with pale buffy or dull buffy whitish, the last streaked, more or less, with the same or with cinnamon-buff; chin, upper throat, and subauricular region immaculate white, forming a very conspicuous  $\Lambda$ -shaped patch; lower throat and upper chest dusky grayish brown with large spots of buff; lower chest vermiculated with dusky and pale buffy grayish or dull grayish white, the last with a tendency to form irregular indistinct spots; rest of under parts pale to deep buff barred with dusky (the bars much narrower than the interspaces), the under tail-coverts deeper buff, with the bars much farther apart; axillars and under wing-coverts deep buff, barred with dusky; under surface of primaries dusky grayish brown or dull brownish slate, the four outermost crossed, at about middle, by a broad band of white; under surface of tail showing broad, more or less broken, bars or transverse spots of pale buff or buffy white anterior to the white subterminal band; bill dusky; iris blackish brown; legs and feet brownish; length (skins), 199-221 (209);<sup>a</sup> wing, 161.3-176 (169.4); tail, 92.5-102.5 (99.1); exposed culmen, 5-6.2 (5.7); tarsus, 12.5-13.8 (13.3); middle toe, 14-14.7 (14.4).<sup>b</sup>

*Adult female*.—Similar to the adult male but lacking the white subterminal band on tail as well as the white patch on outer webs of primaries, the latter with proximal portion marked with large spots of pinkish cinnamon or vinaceous-cinnamon, and white throat-mark more restricted as well as more or less suffused with (sometimes wholly replaced by) pinkish cinnamon or deep pinkish buff; length (skins), 198-216 (206);<sup>c</sup> wing, 158.5-168 (162.1); tail, 90-98.5 (94.4); exposed culmen, 5-6.5 (5.8); tarsus, 12-14 (13.1); middle toe 13-15.3 (14.1).<sup>b</sup>

<sup>a</sup> Six specimens.		<sup>b</sup> Seven specimens.		<sup>c</sup> Five specimens.	
Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Two adult males from Panama and Costa Rica.....	167.8	99	6.5	13.8	14.8
Two adult males from Guatemala and Chiapas.....	178.5	104.3	5.6	13.3	15.3
Seven adult males from Yucatan.....	169.4	99.1	5.7	13.3	14.4
FEMALES.					
Two adult females from Chiapas and Jalisco.....	168.8	100	6	12.9	13.1
One adult female from Campeche.....	163.5	91.5	5.8	14	15
Seven adult females from Yucatan.....	162.1	94.4	5.8	13.1	14.1

*Young*.—Much paler than adults, the general color of upper parts (including wing-coverts) pale grayish to nearly pale buff, minutely marbled and vermiculated with dusky, the pileum with scattered small, mostly sagittate, spots of blackish; bars on under parts much narrower, more irregular, and less sharply defined; younger specimens with the whole throat narrowly, but rather sparsely, barred.

Panamá to southern Mexico; breeding in Guatemala (Dueñas; Cobán; San Gerónimo), Yucatan (Chichen-Itza; Rio Lagartos; Mérida; Cozumél Island), Campeche (Campeche), Tabasco (Montecristo), Chiapas (Palenque; Tuxtla Gutierrez; San Bartolomé; Tonalá), Oaxaca (San Mateo; Juchatengo; Santa Efigénia), Guerrero, Colima, and Jalisco (Zapotlán; Atemajác, near Guadalajara); in migration, south through Honduras (Ruatán Island; Truxillo), British Honduras (breeding?), Nicaragua (Realejo), and Costa Rica (Rio Tirribí; San José; Limón; Salistrál; Pigres; Bolsón) to Panamá (Veragua).

*Chordeiles brasiliensis* (not *Caprimulgus brasiliensis* Gmelin) CASSIN, Proc. Ac. Nat. Sci. Phila., v, 1851, [8], part (Nicaragua).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 314 (Costa Rica).

*Chordeiles brasiliensis* CABANIS, Journ. für Orn., 1862, 165 (Costa Rica; crit.).

*Chordeiles texensis* (not of Lawrence, 1856) SCLATER, Cat. Am. Birds, 1862, 279 (Dueñas and Coban, Guatemala); Proc. Zool. Soc. Lond., 1866, 134, part (Guatemala; monogr.); Journ. für Orn., 1867, 264, part.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120 (Rio Tirribi, Costa Rica); ix, 1869, 204 (Merida, Yucatan); Bull. U. S. Nat. Mus., no. 4, 1876, 31 (San Mateo and Santa Efigenia, Oaxaca).—FRANTZIUS, Journ. für Orn., 1869, 314 (Costa Rica).—NEHRKORN, Journ. für Orn., 1881, 66 (Yucatan; descr. eggs).—SUMICHRIST, La Naturaleza, v, 1882, 249 (San Mateo and Santa Efigenia, Oaxaca).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 451 (n. Yucatan).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 421, part.—ZELEDÓN, Anal. Mus. Nac. C. R. i, 1887, 120 (Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 581 (Truxillo, Honduras).—SALVIN, Ibis, 1889, 368 (Cozumel I., Yucatan; Ruatan I., Honduras; crit.).—CHERRIE, Auk, ix, 1892, 324 (San José, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 397, part (Juchatengo, San Mateo, and Santa Efigenia, Oaxaca; Tonalá, Chiapas; Merida, Cozumel I., etc., Yucatan; Dueñas, San Geronimo, and Coban, Guatemala; Ruatan I. and Truxillo, Honduras; Realejo, Nicaragua; Rio Tirribi and San José, Costa Rica; Veragua, Panama).—UNDERWOOD, Ibis, 1896, 442 (Salistrál, Costa Rica).

[*Chordeiles*] *texensis* COUES, Key N. Am. Birds, 1872, 182, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96, part.—SHARPE, Hand-list, ii, 1900, 80, part (Costa Rica; Panama).

[*Chordeiles*] *texensis* RIDGWAY, Man. N. Am. Birds, 1887, 301, part (Costa Rica).

*Chordeiles acutipennis*, var. *texensis* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 406, part (Yucatan; Costa Rica).

*Chordeiles acutipennis texensis* ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xii, 1895, 167 part; Check List, 2d ed., 1895, no. 421, part (Veragua, Panama); 3rd ed., 1910, 199, part.—BENDIRE, Life Hist. N. Am. Birds, (ii), 1895, 172,



part.—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 228, part (Veragua).—COLE, Bull. Mus. Comp. Zool., 1, 1906, 126 (Chichen-Itza, Yucatan).—CARRIKER, An. Carnegie Mus., vi, 1910, 501 (Pigres, San José, Limón, and Bolsón, Costa Rica).

*Ch[ordeiles] acutipennis texensis* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 20, part.

[*Chordeiles acutipennis*.] Subsp.  $\beta$ . *Chordeiles texensis* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 616, part (Tehuantepec; Tonala, Chiapas; Cozumel Island; ? Ruatan Island; San Geronimo, Guatamala; Realejo, Nicaragua; Veragua, Panama).

*Caprimulgus texensis* KOENIG-WARTHAUSEN, Journ. für Orn., xvi, 1868, 376, part. *Chordediles acutipennis texensis* COUES, Check List, 2d ed., 1882, no. 402, part.

*C[hordediles] acutipennis texensis* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.

*Chordeiles acutipennis micromeris* OBERHOLSER. Bull. 86, U. S. Nat. Mus., 1914, 100.

### CHORDEILES ACUTIPENNIS INFERIOR Oberholser.

#### SAN LUCAS NIGHTHAWK.

Similar to *C. a. micromeris* but larger; upper parts lighter and averaging more brownish (less grayish), and paler bars on tail broader.

*Adult male*.—Length (skins), 218–222 (220)<sup>a</sup>; wing, 171.5–184.5 (176.2); tail, 99–115 (107.1); exposed culmen, 4.9–6.5 (5.7); tarsus, 12.5–14.5 (13.5); middle toe, 13.2–15.1 (14).<sup>b</sup>

*Adult female*.—Length (skins), 194–205 (198)<sup>c</sup>; wing, 165–177 (168.1); tail, 99–105 (102.3); culmen, 5–6 (5.4); tarsus, 12.1–13.7 (13); middle toe, 12.5–14.8 (13.7).<sup>d</sup>

Lower California, from the San Pedro Martir district (La Grulla; Santa Cruz; Valladeros) and San Fernando to Cape San Lucas district (San José del Cabo; La Paz; Triunfo; Sierra de la Laguna; Pearce's Ranch).

*Chordeiles texensis* (not of Cassin) BAIRD, Proc. Ac. Nat. Sci. Phila., 1859, 301, 303 (Cape San Lucas, Lower California); Cat. N. Am. Birds, 1859, no. 116, part.—SCLATER, Proc. Zool. Soc. Lond., 1866, 134, part (monogr.); Journ. für Orn., 1867, 264, part.—COUES, Check List, 1873, no. 268, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 421, part (Cape San Lucas).—BRYANT (W. E.), Proc. Calif. Ac. Sci., 2d ser., ii, 1889, 288 (Cape district, Lower California).—KAEDING, Condor, vii, 1905, 134 (San José del Cabo, Lower California).

[*Chordeiles*] *texensis* COUES, Key N. Am. Birds, 1872, 182, part (Cape San Lucas).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96, part.—SHARPE, Hand-list, ii, 1900, 80, part.

*C[hordeiles] texensis* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.

*Chordeiles acutipennis*, var. *texensis* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 406, part (Cape San Lucas, breeding).

*Chordeiles acutipennis texensis* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 5, part (crit. nom.), 188, part; Nom. N. Am. Birds, 1881, no. 358, part.—BELDING, Proc. U. S. Nat. Mus., v, 1882, 543 (La Paz and San José del Cabo,

<sup>a</sup> Two specimens.

<sup>b</sup> Ten specimens.

<sup>c</sup> Five specimens.

<sup>d</sup> Nine specimens.

Lower California, after April 23).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xii, 1895, 167, part; Check List, 2d ed., 1895, no. 421, part (Cape San Lucas); 3rd ed., 1910, 199, part (Cape San Lucas).—BENDIRE, Life Hist. N. Am. Birds, (ii), 1895, 172, part.—ANTHONY, Auk, xii, 1895, 139 (San Fernando, Lower California).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 228, part.—BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 110 (Triunfo, Sierra de la Laguna, San José del Cabo, La Paz, and Pearce's Ranch, s. Lower California; crit.; habits).

*Ch[ordeiles] acutipennis texensis* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 20, part.

*Chordediles acutipennis texensis* COUES, Check List, 2d ed., 1882, no. 402, part.

*C[hordediles] acutipennis texensis* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.

[*Chordeiles acutipennis*.] Subsp.  $\beta$ . *Chordeiles texensis* HARTERT, Cat. Birds Brit.

Mus., xvi, 1892, 616, part (Triunfo and Cape St. Lucas, L. Calif.).

*Chordeiles acutipennis inferior* OBERHOLSER, Bull. 86, U. S. Nat. Mus., 1914, 109.

### CHORDEILES ACUTIPENNIS TEXENSIS (Lawrence).

#### TEXAS NIGHTHAWK.

Similar in coloration to *C. a. inferior*, but larger.

*Adult male*.—Length (skins), 208–237 (223)<sup>a</sup>; wing, 173–192 (183.4); tail, 104–119 (111.6); culmen, 5–6.8 (5.9); tarsus, 13–15 (14); middle toe, 13–15 (14.2).<sup>b</sup>

*Adult female*.—Length (skins), 195–230 (216)<sup>c</sup>; wing, 168.5–180 (175); tail, 102–110 (106.1); culmen, 5.1–7 (6); tarsus, 12.5–15.2 (13.5); middle toe, 13–15.8 (14.2).<sup>c</sup>

Southwestern United States, from southern Texas (north to Galveston, Montgomery, Mason, Kerr, Tom Green, Concho, and Reeves counties), through southern New Mexico (Almagorda; Deming; Lone Mountain, Grant County), southeastern Colorado (Hoehne, near Trinidad, 'casually'), southern Utah (Saint George), southern Nevada (Virgin Valley; Vegas Valley; Ash Meadows), and Arizona to southern and central California (north to Mendocino, Glenn, and Tuolumne counties); breeding southward over northern and central Mexico, in States of Sonora, Chihuahua, Coahuila, Nuevo León (Santa Catarina; San Pedro; San Agustín; Montemorelos), Tamaulipas (Matamoros;

<sup>a</sup> Twelve specimens.

<sup>b</sup> Fifteen specimens.

<sup>c</sup> Nine specimens.

Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
MALES.					
Five adult males from California.....	185.2	112.9	6	13.9	14.2
Five adult males from Arizona.....	184.3	113.7	5.5	14.2	14.3
Five adult males from Texas.....	180.7	108.3	6.1	13.9	14.1
FEMALES.					
Five adult females from California.....	174.8	107.3	6.1	13.6	14.3
Five adult females from Arizona.....	174.4	106.5	6.2	13.4	14.5
Five adult females from Texas.....	175.9	104.4	5.6	13.3	13.9

Xicotencal; Alta Mira), San Luis Potosí, Guanajuato, Queratero, Hidalgo, Tlaxcala, Puebla (Atotonilco, San Baltazar), Vera Cruz (Jalapa), Morelos (Puente de Ixtla), Mexico (Valley of Mexico; Mexicalcingo; Coapa; Culhuacán; Chimalpa), Aguas Calientes (Chicalote), Zacatecas, Durango (Rancho Baillón), and Sinaloa (Mazatlán; Sierra de Álamos) and Territory of Tepic (San Blas); wintering from west-central and southern Mexico, in States of Durango (Chacalá), Colima (Plains of Colima; Manzanillo), Vera Cruz (Orizaba), Yucatan (Cozumél Island), etc., southward through Central America to eastern Panamá (Cana, Darién).

*Chordeiles brasilianus* (not *Caprimulgus brasilianus* Gmelin) LAWRENCE, Ann. Lyc. N. Y., v, 1851, 114 (Texas; crit.).—BAIRD, in Rep. Stansbury's Survey Great Salt Lake, 1852, 327 (Rio Grande).—CASSIN, Illustr. Birds Calif., Texas, etc., 1855, 238 (Texas).

*Chordeiles sapiti* (not of Bonaparte) CASSIN, Illustr. Birds Calif., Texas, etc., 1855, 238 (Texas; New Mex.).

*C[hordeiles] sapiti* CABANIS and HEINE, Mus. Hein., iii, 1860, 86 (Mexico).

*Chordeiles texensis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vi, 1858, 167, 168 (Texas; coll. G. N. Lawrence?); Mem. Bost. Soc. N. H., ii, 1874, 291 (Mazatlán, Sinaloa; San Blas, Tepic; habits; descr. nest and eggs).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 154 (Santa Catarina, Nuevo Leon; Eagle Pass, Ringgold Barracks, and El Paso, Texas; Colorado R., California); ed. 1860 (Birds N. Am.), atlas, pl. 44; Cat. N. Am. Birds, 1859, no. 116, part; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 7, pl. 6.—DRESSER, Ibis, 1865, 471 (Matamoros to San Antonio and eastward).—COUES, Proc. Ac. Nat. Sci. Phila., 1868, 82 (Date Creek, Arizona; crit.); Am. Nat., v, 1871, 363 (crit.); Check List, 1873, no. 268, part; Birds Northwest, 1874, 263 (synonymy).—SCLATER, Proc. Zool. Soc. Lond., 1866, 134, part (monogr.); Journ. für Orn., 1867, 264, part.—COOPER, Orn. Calif., 1870, 345 (Ft. Mojave and west to coast mts., s. California); Auk, iv, 1887, 92 (Ventura Co., California).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 46, fig. 5; iii, 1874, 521 (San Buenaventura, California).—SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 34 (Hidalgo, Texas; measurements, habits, etc.); v, 1879, 411 (Lomita Ranch, Texas, breeding; habits); Auk, iv, 1887, 27 (descr. young).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 421, part.—SCOTT, Auk, iii, 1886, 429 (Florence, Riverside, etc., s. Arizona; breeding in Catalina Mts. at 3,500 ft.).—COOKE, Bird Migr. Miss. Val., 1888, 139 (Mason, San Angelo, and Houston, Texas).—LLOYD, Auk, iv, 1887, 191 (Tom Green and Concho counties, Texas).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 116 (Tucson, Arizona; habits).—ANTHONY, Auk, ix, 1892, 362 (Deming, s. w. New Mexico; habits; notes).—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 53 (Owens Valley, north to south fork of Kern R., California; Ash Meadow, etc., s. Nevada; St. George, s. Utah).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 397, part (San Pedro, San Antonio, San Augustin, and Montemorelos, Nuevo Leon; Alta Mira and Xicotencal, Tamaulipas, Mexicalcingo, Coapa, Culhuacan, and Chimalpa, Mexico; Atotonilco, San Baltazar, Puebla; Sierra de Alamos and Mazatlan, Sinaloa; San Blas, Tepic; Plains of Colima, Colima; Santa Ana, near Guadalajara, Jalisco).

[*Chordeiles*] *texensis* COUES, Key N. Am. Birds, 1872, 182, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 96, part.—SHARPE, Hand-list, ii, 1900, 80, part.

*C[hordeiles] texensis* RIDGWAY, Man. N. Am. Birds, 1887, 301, part.



- [*Chordeiles*] *texensis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 191 (Mexico).
- Chordeiles acutipennis*, var. *texensis* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 406, part.—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 146 (Ft. Brown, Texas; habits; notes; descr. eggs).
- Chordeiles acutipennis* . . . var. *texensis* HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 129 (Gila R., Arizona).
- Chordeiles acutipennis texensis* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 5 (crit.), 188, part; Nom. N. Am. Birds, 1881, no. 358, part.—BELDING, Proc. U. S. Nat. Mus., v, 1883, 543, part (San Diego, California, May).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xii, 1895, 167, part; Check List, 2d ed., 1895, no. 421, part; 3rd ed., 1910, 199, part.—BENDIRE, Life Hist. N. Am. Birds (ii), 1895, 172, part, pl. 3, figs. 7, 8, 9, 10.—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 27 (Los Angeles Co., California, breeding).—MAILLIARD, Condor, iii, 1901, 123 (San Benito Co., California, breeding).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 228, part.—MONTGOMERY, Auk, xxii, 1905, 14 (Montgomery Co., Texas).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 166 (Rancho Baillon, n. w. Durango, May; crit.).—SHARP, Condor, ix, 1907, 88 (San Diego Co., California, breeding).—GOLDMAN, Condor, x, 1908, 204 (mouth of Kern R. Canyon, California, breeding).—COOKE, Condor, xiv, 1912, 148 (Hoehne, near Trinidad, Colorado, June 11, 1908).—TAYLOR (W. P.), Condor, xiv, 1912, 222, in text (Winslow, Glen Co., California, breeding).
- [*Chordeiles acutipennis*] subsp.  $\beta$ . *Chordeiles texensis* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 616, part.
- Ch[ordeiles] acutipennis texensis* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 20, part.
- Chordeiles acutipennis texensis* COUES, Check List, 2d ed., 1882, no. 402, part.—BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 21 (Santa Rita Mts., Tucson, and Camp Lowell, Arizona).
- [*Chordeiles*] *acutipennis texensis* COUES, Key N. Am. Birds, 2d ed., 1884, 454, part.
- Chordeiles acutipennis texensis* NEHRING, Bull. Nutt. Orn. Club, vii, 1882, 170 (Harris, Montgomery, Galveston, and Ford counties, s. e. Texas; habits).
- Caprimulgus texensis* KOENIG-WARTHAUSEN, Journ. für Orn., xvi, 1868, 376, part.

## Family NYCTIBIIDÆ.

### THE POTOOS.<sup>a</sup>

- =*Nyctibiinæ* CABANIS and HEINE, Mus. Hein., iii, 1860, 94.—SCLATER, Cat. Am. Birds, 1862, 278.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 387, in text.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 398.—SHARPE, Handlist, ii, 1900, 78.
- =*Nyctibiidæ* SHARPE, Rev. Classif. Birds, 1891, 81.
- >*Steatornithinæ* BONAPARTE, Consp. Av., i, 1850, 57 (includes *Steatornithes* and *Podargi*).
- >*Podargidæ* GADOW, in Bronn's Thier-Reich, Vög., ii, 1891, 242, 300 (includes *Podargi*).

<sup>a</sup> The choice of a vernacular name for the birds of this family seems to be between the Jamaican vernacular *Potoo* and the Paraguayan (Indian) name *Ibijau* (pronounced *Ebehóu*), neither of which, unfortunately, is particularly euphonious.

Very large Caprimulgi with toes normal (the outer toe consisting of five phalanges, the hallux of three phalanges), tarsus much shorter than hallux, outer toe as long as middle toe, middle claw not pectinated, metasternum deeply 4-notched, powder-down patches present on breast and sides of body, and maxillary tomium with a prominent "tooth" or angular projection at commencement of the strongly convex and very prominent rictal portion.

The Nyctibiidæ differ from the Caprimulgidæ in many of their habits, among which may be mentioned their position while perching, which is upright, the bill pointing upward, in which respect they agree with the Podargidæ. So far as known, all Caprimulgidæ lie flat to the perch (or ground) in a horizontal position, when at rest.

This family is confined to the tropical parts of America, and includes a single genus, *Nyctibius* Vieillot.

#### Genus NYCTIBIUS Vieillot.

*Nyctibius* <sup>a</sup> VIEILLOT, Analyse, 1816, 38; Nouv. Dict. d'Hist. Nat., xvi, 1817, 6.

(Type, *Grand Engoulevent de Cayenne* Buffon = *Caprimulgus grandis* Gmelin.)

*Nictibius* (emendation?) D'ORBIGNY and LAFRESNAYE, Mag. de Zool., 1839 (Synopsis Avium, p. 67).

*Nyctornis* <sup>b</sup> (not *Nyctiornis* Swainson, 1831) NITZSCH, Obs. Av. Art. Carot. Comm., 1829, 15. (Type, *Caprimulgus grandis* Gmelin.)

(?) *Ibijus* RAFINESQUE, Analyse de la Nature, 1815, 69 (nomen nudum).

In addition to the characters given above under the heading of Family Nyctibiidæ the following are diagnostic of the genus *Nyctibius*:

Bill relatively very small, broadly angular and much depressed basally, narrow, compressed, and strongly decurved terminally, the basal half (more or less) hidden by the dense, antrorse, laterally closely appressed loreal feathering; culmen rounded, strongly defined laterally by a broad sulcus running from nasal fossæ to behind base of uncinat tip of maxilla; nostril narrowly ovate (the posterior end narrower and more or less acute), longitudinal, opening against lateral base of the rhinotheca, the membranous integument of the nasal fossa not inflated; maxillary tomium nearly straight from base of maxillary unguis to a conspicuous angular or knot-like prominence or tooth, thence strongly deflected and more or less convex to the rictus beneath posterior angle, or at least posterior to middle, of eye; mandible abruptly and strongly decurved subterminally, the tip slightly recurved, or straight and inclined downward at a less angle than trend of the subterminal portion; gonys exceedingly short (scarcely longer than nostril), straight, flattened or very broadly and slightly

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<sup>a</sup> νυκτίβιος, noctu victum quærens. (Vieillot.)

<sup>b</sup> Νύξ (νυκτός), night; ὄρνις, bird. (Richmond.)

rounded. No rictal bristles, but longer antrorse loreal feathers with slender bristly points. Wing very long, the longest primaries exceeding distal secondaries by much more than one-third to nearly half the length of wing; seventh, eighth, and ninth primaries longest, the tenth (outermost) longer than fifth (sometimes longer than sixth); fifth or sixth to ninth primaries, inclusive, with outer web strongly sinuated anterior to middle portion (the sinuation of the ninth concealed by primary coverts). Tail two-thirds to nearly as long as wing, more or less rounded, sometimes with tip subcuneate (the middle rectrices considerably longer than next pair); rectrices ten. Tarsus excessively short and thick (shorter than hallux without claw, its transverse diameter equal to more than half its length), nonscutellate, the acrotarsium, however, with faint indications of irregularly subquadrate or lozenge-shaped (sometimes longitudinal) small scutella, the extreme upper portion (both before and behind) clothed with small short feathers; toes relatively short and very stout, with the normal number of phalanges (3, 3, 4, 5, instead of 2, 3, 4, 4, as in the Caprimulgidæ); outer toe (of 5 phalanges much longer than inner toe, its claw reaching to beyond base of middle claw; hallux of 3 phalanges nearly as long as inner toe, much longer than tarsus; all the anterior toes united or coalesced for length of basal phalanx, the two lateral ones (especially the inner), together with the hallux, greatly expanded basally, forming a very broad flat sole (tylarus); claws rather short but strongly curved, that of the middle toe with inner edge neither produced nor pectinated.

*Plumage and coloration.*—Plumage in general rather harsher or coarser, the primaries and rectrices harder or more rigid, than in the Caprimulgidæ; loreal feathers large, dense, semierect (antrorse anteriorly), closely appressed laterally, covering whole of the basal (expanded) portion of the maxilla, the anterior ones with slender bristly tips, these sometimes reaching to or beyond tip of bill; no rictal bristles; interramal space completely feathered; plumage of occiput, nape, and hind-neck very long and full. Coloration mottled brown, buffy, and grayish, more or less streaked or spotted with blackish; primaries and rectrices more or less distinctly barred or banded (or spotted in transverse series), but neither with any white area.

*Range.*—Southern Mexico to Peru, Paraguay, southern Brazil, and Cayenne; also Jamaica. (Seven species.)<sup>a</sup>

<sup>a</sup> Of the recognized species I have not seen *N. longicaudatus*, *N. leucopterus*, nor *N. bracteatus*, the above generic description being based on *N. grandis*, *N. aethereus*, *N. griseus*, and *N. maculosus*.



## KEY TO THE SPECIES AND SUBSPECIES OF NYCTIBIUS.

- a. No white spots or large whitish area on innermost (proximal) middle wing-coverts; under wing-coverts spotted or barred with white.
- b. Lesser wing-coverts not uniform black or dark sooty brown; pileum streaked and barred or vermiculated with dusky on a white or pale buffy (sometimes partly rufous) ground; general coloration paler, with whitish predominating; largest species (wing 365–391 mm.). (Panama to southern Brazil.)  
**Nyctibius grandis** (p. 587).
- bb. Lesser wing-coverts uniform dark sooty brown or black; pileum broadly striped or spotted with sooty black or dark sooty brown; general color much darker, with little whitish; smaller (wing 215–365).
- c. Blackish lesser covert area immediately succeeded by a band of whitish, buffy, or ochraceous (most distinct toward bend of wing).
- d. Larger (wing 350–365 mm.); general color browner or grayer. (Brazil.)  
**Nyctibius æthereus** (extralimital).<sup>a</sup>
- dd. Smaller (wing 280–305); general coloration more rufescent. (Guianas to eastern Ecuador and Peru.) . . . **Nyctibius longicaudatus** (extralimital).<sup>b</sup>
- I have not seen a specimen of this species.
- cc. Blackish lesser covert area not succeeded by a band of whitish, buffy, or ochraceous. (*Nyctibius griseus*.)
- d. Paler, the under tail-coverts less heavily mottled and inner webs of primaries more distinctly spotted; under parts less uniform.
- e. Larger (wing averaging 290 or more, tail averaging more than 210).
- f. Smaller (wing averaging 290, tail averaging less than 215).
- g. Paler; tail averaging 213.1. (Jamaica.)  
**Nyctibius griseus jamaicensis** (p. 589).
- gg. Darker; tail averaging 211.2. (Cost Rica.)  
**Nyctibius griseus costaricensis** (p. 593).
- ff. Larger (wing averaging 306.5, tail averaging 220.2). (Vera Cruz and Puebla, Mexico, to Guatemala.)  
**Nyctibius griseus mexicanus** (p. 592).
- ee. Smaller (wing averaging 275 or less, tail averaging less than 203).
- f. Wing averaging 275.3, tail 202.8. (Panama to central Colombia.)  
**Nyctibius griseus panamensis** (p. 593).
- ff. Wing averaging 246.2, tail 179.4. (Trinidad to Guianas and lower Amazon Valley.) . . . **Nyctibius griseus griseus** (extralimital).<sup>c</sup>

<sup>a</sup> *Caprimulgus æthereus* Maximilian, Reise Bras., i, 1820, 236 (Rio Macuré, Prov. Bahia, Brazil; type now in coll. Am. Mus. N. H.).—*N[yc]tibius æthereus* Gray, Gen. Birds, i, 1846, 46.—*Nyctibius æthereus* Cassin, Proc. Ac. Nat. Sci. Phila., v, 1851, 184; Hartert, Cat. Birds Brit. Mus., xvi, 1892, 627.

<sup>b</sup> *Caprimulgus longicaudatus* Spix, Av. Bras., ii, 1825, 1, pl. 1 (Rio Japurá, Brazil).—*Nyctibius longicaudatus* Lafresnaye, Mag. de Zool., 1837, classe ii, not. 83, p. 25 (monogr.); Hartert, Cat. Birds Brit. Mus., xvi, 1892, 626.

<sup>c</sup> [*Caprimulgus*] *griseus* Gmelin, Syst. Nat., i, pt. ii, 1789, 1029 (Cayenne; based on *Engoulevent gris* Buffon, Hist. Nat. Ois., vi, 548; *Grey Goatsucker* Latham, Synop. Birds, ii, pt. 2, 592).—*Nyctibius griseus* Berlepsch, Novit. Zool., xv, Nov., 1908, 270 (Cayenne; crit.).—*Nyctibius griseus griseus* Hellmayr, Novit. Zool., xiii, Feb., 1906, 37 (Chaguanas and Savana Grande, Trinidad; crit.).—*Nyctibius jamaicensis* (not *Caprimulgus jamaicensis* Gmelin) Hartert, Cat. Birds Brit. Mus., xvi, 1892, 625, part.—(?) *Nyctibius pectoralis* Gould, Icones Avium, pt. ii, Aug., 1838, pl. 18 and text (northern parts of Brazil).

dd. Darker, the under parts more uniform in color, under tail-coverts more heavily mottled, and spots on inner webs of primaries less distinct (sometimes obsolete). (Ecuador and Peru to southwestern Brazil; southeastern Brazil?; Paraguay?; Argentina?)

**Nyctibius griseus cornutus?** (extralimital).<sup>a</sup>

aa. A large area of white or buffy or conspicuous spots of the same on proximal middle wing-coverts; under wing-coverts uniform sooty black or dark sooty brown.

b. Larger (wing 215-265, tail 137-187 mm.); general color deep brown or dusky.

c. Larger (wing 265, tail 185-187). (Central Colombia to northern Ecuador.)

**Nyctibius maculosus** (extralimital).<sup>b</sup>

cc. Smaller (wing 215, tail 137). (Coast district of southern Brazil.)

**Nyctibius leucopterus** (extralimital).<sup>c</sup>

bb. Smaller (wing 160, tail 127); general color bright rufous. (Colombia to Guiana and Peru.).....**Nyctibius bracteatus** (extralimital).<sup>d</sup>

### NYCTIBIUS GRANDIS (Gmelin).

#### GRAND POTOO.

*Adults (sexes alike?).*—Ground-color of whole plumage, except lesser wing-coverts, remiges, and rectrices but including proximal secondaries, mixed white and buffy, in varying relative proportion, sometimes more or less suffused, especially on scapulars, with light rusty or cinnamon-rufous, everywhere irregularly barred and marbled or coarsely vermiculated with dusky; pileum and hind-neck more regularly or uniformly barred, and with more or less dis-

<sup>a</sup> (?) *Caprimulgus cornutus* Vieillot, Nouv. Dict. d'Hist. Nat., x, 1817, 245 (Paraguay; based on *Urutau* Azara, Apunt. Parag., no. 308).—(?) [*Nyctibius*] *cornutus* Bonaparte, Consp. Av., i, 1850, 58.—*Nyctibius cornutus* Tschudi, Fauna Peruana, Aves, 1846, 123.—*Nyctibius urutau* Lafresnaye, L'Echo du Monde Sav., 3<sup>e</sup> an., no. 175, Oct. 22, 1836, 188 (based on *Urutau* Azara, Apunt. Parag., no. 308); Mag. de Zool., ann. 7, 1837, cl. ii, not. 83, pl. 82 (monogr.).—(?) *Nyctibius pectoralis* (not of Gould?) Scater, Proc. Zool. Soc. Lond., 1860, 79 (near Quito, Ecuador).—(?) *Nyctibius griseus griseus* (not *Caprimulgus griseus* Gmelin) Hartert and Venturi, Novit. Zool., xvi, 1909, 224 (Chaco, Argentina); Dabbene, Orn., Argent., 1910, 421 (Misiones and Santa Ana, Argentina).

I have not seen specimens from southeastern Brazil, Paraguay, or Argentina, and therefore do not know whether they are identical with those from other localities mentioned or not.

<sup>b</sup> *Nyctibius maculosus* Ridgway, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 92 (Ambato, Ecuador; coll. Am. Mus. Nat. Hist.).

<sup>c</sup> *Caprimulgus leucopterus* Maximilian, Reise Bras., ii, 1821, 227 (Caravellas, near Bahia, Brazil; type now in coll. Am. Mus. N. H.); Beitr. Naturg. Bras., iii, pt. i, 1830, 311.—*Nyctibius leucopterus* Des Murs, Icon. Orn., livr. 9, May, 1847, pls. 49, 50; Scater, Proc. Zool. Soc. Lond., 1866, 130 (monogr.); Hartert, Cat. Birds Brit. Mus., xvi, 1892, 694.—[*Chordeiles*] *leucopterus* Bonaparte, Consp. Av., i, 1850, 63.

This species is autoptically unknown to me, and I am therefore unable to give the color-characters wherein it differs from *N. maculosus*.

<sup>d</sup> *Nyctibius bracteatus* Gould, Proc. Zool. Soc. Lond., xiv, 1846 (pub. May, 1846), 1 (Bogota, Colombia; coll. Mus. Roy. Inst. Liverpool); Scater, Proc. Zool. Soc. Lond., 1866, 130 (monogr.), 585 (crit.); Hartert, Cat. Birds Brit. Mus., xvi, 1892, 623.—*Nyctibius rufus* Cabanis, in Schomburgh's Reis. Brit. Guiana, iii, 1848, 711 (Cumaka, Brit. Guiana); Scater, Proc. Zool. Soc. Lond., 1866, 130 (monogr.), 585 (crit.).

This species also I have not seen.

tinct dusky shaft-streaks; back and scapulars with the barring coarser and more irregular, the latter sometimes with a few very irregular blotches of brownish black; lesser wing-coverts rather broadly but irregularly barred with blackish and russet, in varying relative proportion, sometimes uniform dusky on the anterior portion; remiges (except proximal secondaries) dull brownish black to dull brownish slate-blackish, crossed by narrow broken bands of light grayish, these assuming the form of distinct spots on outer webs of primaries, the corresponding markings on inner webs broken by dusky marbling, the terminal portion of the primaries with uniform light silvery gray interspaces separating broad transverse areas of the same, broken by marblings of blackish and often encircled by a broken narrow area of the same; rectrices irregularly marbled with pale gray, grayish white, and dusky (the first two predominating), sometimes suffused or intermixed with buffy or pale rusty, the heavier dusky markings disposed in the form of more or less distinct transverse, much broken, bands; chin and throat with sparse, irregular, sometimes indistinct, narrow broken bars of dusky; chest more broadly and regularly barred, or coarsely vermiculated with dusky, the breast similarly marked but with a greater or less number of irregular black spots or blotches, of variable size; remaining under parts irregularly and rather sparsely marked with zigzag bars and marblings of dusky, the under tail-coverts sometimes nearly immaculate; under wing-coverts slate color, more or less broadly barred or transversely spotted with grayish white, sometimes suffused with buffy or pale rusty; bill and feet brownish (in dried skins).

*Adult male*.—Length (skin), about 500; wing, 368; tail, 260; exposed culmen, 33; tarsus, 15.5; middle toe, 30.<sup>a</sup>

*Adult female*.—Length (skin), 500; wing, 365; tail, 257; exposed culmen, 35.5; tarsus, 16; middle toe, 30.<sup>b</sup>

Panamá (Lion Hill; Punta de Sabana) and southward through Colombia (lower Rio Magdalena), Venezuela (San Cristóbal), the Guianas, eastern Ecuador (Sarayacu), and Peru (upper Rio Ucayali) to southern Brazil (São Paulo, Cantogallo, and Novo Friburgo, São Paulo; Pará; Rio Belmonte; Amapá; Obidos; Teffé).

<sup>a</sup> One specimen from Para, Brazil.

<sup>b</sup> One specimen from lower Rio Magdalena, Colombia.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
SEX NOT DETERMINED.					
Two adults (sex not determined) from British Guiana.....	366.5	256	31.7	16.7	29
One adult (sex not determined) from Panama.....	391	295	-----	16	32



[*Caprimulgus*] *grandis* GMELIN, Syst. Nat., i, pt. ii, 1789, 1029 (Cayenne; based on *Caprimulgus brasiliensis major nævius* Brisson, Orn., ii, 485; *Grand Ibijau* Buffon, Hist. Nat. Ois., vi, 541; *Grand Crapaud-volant de Cayenne* Daubenton, Pl. Enl., pl. 325; *Grand Goatsucker* Latham, Synop., ii, pt. 2, 590; etc.).—LATHAM, Index Orn., ii, 1790, 383 (Cayenne).

C[*aprimulgus*] *grandis* MAXIMILIAN, Beitr. Naturg. Bras., i, 1830, 295 (Rio Belmonte, Brazil).

*Caprimulgus grandis* TEMMINCK, Cat. Syst., 1807, 137.—JARDINE and SELBY, Illustr. Orn., 1829(?), pl. 89.—KOENIG-WARTHAUSEN, Journ. für Orn., 1868, 372 (descr. eggs).

*Nyctibius grandis* VIEILLOT, Nouv. Dict. d'Hist. Nat., xvi, 1825, 7.—LAFRESNAYE, Mag. de Zool., 1837, classe ii, not. 83, pl. 83, fig. 2a (p. 23) (monogr.).—GRAY, Gen. Birds, i, 1849, pl. 16.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1851, 184 (Surinam; Cayenne); Cat. Caprim. Mus. Phila. Ac., 1851, (5).—BURMEISTER, Journ. für Orn., 1853, 169 (Brazil; descr. egg); Syst. Ueb. Th. Bras., ii, 1856, 374.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panama).—SCLATER, Proc. Zool. Soc. Lond., 1866, 128, 145 (monogr.); Journ. für Orn., 1867, 256.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1866, 193 (Ucayali, e. Peru); 1873, 290 (upper Ucayali, e. Peru); 1875, 237 (San Cristobal, Venezuela).—PELZELN, Orn. Bras., i. Abth., 1868, 10.—EULER, Journ. für Orn., 1869, 251 (Brazil; habits; nesting).—REINHARDT, Ved. Med. Nat. Förh., 1870, 115 (Brazil).—TACZANOWSKI, Orn. du Pérou, i, 1884, 204.—SALVIN, Ibis, 1885, 437 (Camacusa, Brit. Guiana).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 628 (San Cristobal, Venezuela; Camacusa, Brit. Guiana; Cayenne; Sarayacu, e. Ecuador; upper Ucayali, e. Peru).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 400 (Lion Hill, Panama; etc.).—GOELDI, Ibis, 1897, 161 (Amapa, n. e. Brazil).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Punta de Sabana, Panama).—IHERING, Rev. Mus. Paulista, iii, 1899, 277 (Sao Paulo, s. Brazil); iv, 1900, 76 (descr. eggs), 160 (Cantagallo and Novo Fribourgo, s. Brazil).—HELLMAYR, Novit. Zool., xiv, 1907, 33 (Obidos, Brazil; crit.), 78 (Teffé, Brazil; crit.).—BERLEPSCH, Journ. für Orn., xv, 1908, 270 (Cayenne).

[*Nyctibius*] *grandis* BONAPARTE, Consp. Av., i, 1850, 58.—GRAY, Hand-list, i, 1869, 55, no. 605.—PELZELN, Orn. Bras., iv. Abth., 1870, 400.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95.—SHARPE, Hand-list, ii, 1900, 79.

N[*yctibius*] *grandis* CABANIS and HEINE, Mus. Hein., iii, 1860, 94 (Surinam; Brazil).—HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 16.

### NYCTIBIUS GRISEUS JAMAICENSIS (Gmelin).

#### JAMAICAN POTOO.

*Adult male*.—Pileum broadly streaked or striped with black and white, or white and pale brownish buffy, the black predominating; hindneck and back brownish gray to light buffy brown, faintly vermiculated with darker and narrowly streaked with black; scapular region in part similar in coloration to back, but the anterior portion irregularly spotted or blotched with black; lower back and rump dull sooty black or slate-blackish, uniform anteriorly (sometimes throughout) but usually more or less spotted posteriorly with pale buffy brown or brownish gray; upper tail-coverts dusky with small spots of pale brownish gray or buffy brownish; anterior portion of

lesser wing-covert area uniform sooty black; middle coverts and posterior lesser coverts light cinnamon or buffy cinnamon (sometimes intermixed with brownish gray), sparsely and rather indistinctly vermiculated with darker grayish and with sharply defined mesial streaks of black; greater coverts mottled or marbled with brownish gray, pale cinnamon, whitish, and dusky; proximal secondaries marbled and mottled with pale and deeper brownish gray and whitish (sometimes suffused with cinnamon-buffy) and with sharply defined irregular mesial streaks of black; other secondaries dusky, mottled or marbled along edges with pale brownish gray and pale cinnamon-buff, and with indistinct spots of mottled grayish (more obvious on inner webs) arranged in transverse series; primaries sooty slate-blackish, their outer webs with large spots of pale gray, their inner webs with less distinct and more broken spots of darker grayish, the terminal portion with irregular lines and marblings of light gray on a dusky ground; tail banded with brownish black and grayish, the bands of very irregular definition and much broken (especially the grayish ones) by irregular lines and marblings (mostly of longitudinal tendency), the black bands relatively broader and more uniform on proximal portion of tail; auricular region mostly plain sooty black or dusky, forming a distinct postocular stripe; throat pale buffy grayish or dull cinnamon-buff passing into a paler tint of the same (sometimes into dull white) on chin, each feather with a narrow mesial streak of black; chest similar but (usually) more or less vermiculated with grayish and the streaks broader, the breast similar but the vermiculations more distinct and some of the feathers with a large terminal spot of black; abdomen and sides like breast but without black spots and the ground-color passing into whitish on flanks and anal region; under tail-coverts white to buffy white sparsely mottled with light gray and with distinct (sometimes broken) mesial streaks of black; under wing-coverts black broken by small spots of white; bill dusky brownish (in dried skins); iris "hazel, orange-colored, or brilliant straw yellow;" <sup>a</sup> feet brownish (whitish in life); <sup>a</sup> length (skins), 380-410 (393); wing, 293-297 (295.2); tail, 212-235 (223.7); exposed culmen, 25-27 (25.7); tarsus, 12-14 (13); middle toe, 22-23 (22.5).<sup>b</sup>

*Adult female*.—Similar to the adult male and not always distinguishable, but usually (?) <sup>c</sup> the general "tone" of coloration more buffy or cinnamonaceous; length (skins), 395-416 (402); wing, 285-

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<sup>a</sup> According to Gosse.

<sup>b</sup> Four specimens.

<sup>c</sup> Of the four males from Jamaica, only one is in the cinnamon-buffy plumage, but the three females are all in that plumage. The difference evidently is not constant, and, judging from indications in some of the other forms of the species I am led to doubt whether there is even an average difference between the sexes.

299 (291); tail, 210–216 (212.3); exposed culmen, 25–28 (26.3); tarsus, 13.5–14 (13.7); middle toe, 23–23.5 (23.3).<sup>a</sup>

Island of Jamaica (near Spanishtown; Priestmans River; Mo-  
neague; Westmoreland; Port Henderson). Cuba?

[*Caprimulgus*] *jamaicensis* GMELIN, Syst. Nat., i, pt. 2, 1789, 1029 (Jamaica; based on *Guirea-querca* Ray, Av., 180; Buffon, Hist. Nat. Ois., vi, 536; *Wood-Owle* Sloane, Voy. Jam., ii, 295; *Mountain Owl* Brown, Jam., 473; *Jamaica Goat-sucker* Latham, Synop., ii, pt. 2, 591).—LATHAM, Index Orn., ii, 1790, 584 (Jamaica).

*Caprimulgus jamaicensis* STEPHENS, Shaw's Gen. Zool., x, 1817, 144.—VIEILLOT, Nouv. Dict. d'Hist. Nat., x, 1817, 238 (Jamaica).—DENNY, Proc. Zool. Soc. Lond., 1847, 38 (Jamaica).

*Nyctibius jamaicensis* GOSSE, Birds Jam., 1847, 41; Illustr. Birds Jam., 1849, pl. 6.—(?)CABANIS, Journ. für Orn., 1856, 6 (Cuba).—GUNDLACH, Journ. für Orn., 1861, 412 (Cuba; crit.).—SCLATER, Proc. Zool. Soc. Lond., 1861, 77 (Jamaica); 1866, 129, part (monogr.; Jamaica); Cat. Am. Birds, 1862, 278 (Jamaica); Journ. für Orn., 1867, 257 (translation); Revised List Birds Jam., 1910, 10.—ALBRECHT, Journ. für Orn., 1862, 199 (Jamaica).—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 286 (Jamaica).—CORY, Auk, iii, 1886, 338; Birds West Ind., 1889, 133; Cat. West. Ind. Birds, 1892, 105, 130.—SCOTT, Auk, ix, 1892, 275 (Jamaica; habits).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 625, part (Jamaica).—FIELD, Auk, xi, 1894, 125 (Port Henderson, Jamaica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 399, part (Jamaica).

<sup>a</sup> Three specimens.

Locality.	Wing.	Tail.	Ex- posed culmen.	Tarsus.	Middle toe.
MALES.					
Four adult males from Jamaica ( <i>N. g. jamaicensis</i> ).....	295.2	223.7	25.7	13	22.4
One adult male from e. Mexico (Puebla) ( <i>N. g. mexicanus</i> ).....	305	220	27	13	23
Two adult males from Costa Rica ( <i>N. g. costaricensis</i> ).....	297	222.5	24	12.2	21.7
Four adult males from Panama ( <i>N. g. panamensis</i> ).....	278	201	21.7	11.9	20.4
One adult male from Trinidad ( <i>N. g. griseus</i> ).....	257	180	21	11	19
One adult male from Para ( <i>N. g. griseus</i> ).....	254	188	21	9	18
One adult male from s. w. Brazil (Chapada) ( <i>N. g. cornutus</i> )..	263	179	23	12	19
FEMALES.					
Three adult females from Jamaica ( <i>N. g. jamaicensis</i> ).....	291	212.3	26.3	13.7	23.3
One adult female from e. Mexico (Puebla) ( <i>N. g. mexicanus</i> )...	304	216	25.5	13	24
Two adult females from Costa Rica ( <i>N. g. costaricensis</i> ).....	283	200	20.2	11.7	19
One adult female from n. Ecuador ( <i>N. g. cornutus?</i> ).....	265	190	18.5	11	20
SEX UNDETERMINED.					
Two adults from Jamaica ( <i>N. g. jamaicensis</i> ).....	277.5	195.5	25	11.7	22.2
One adult from e. Mexico (Mirador, Vera Cruz) ( <i>N. g. mexicanus</i> )	312	230	.....	13	23
One adult from Guatemala ( <i>N. g. mexicanus</i> ).....	305	215	21	12	21
One adult from Panama ( <i>N. g. panamensis</i> ).....	263	193	20.5	11	20.5
One adult from Colombia ( <i>N. g. panamensis</i> ).....	265	220	20	11	19
Two adults from British Guiana ( <i>N. g. griseus</i> ).....	234	175.5	22	10.2	18.5
Two adults from Amazon River ( <i>N. g. griseus?</i> ).....	258.5	186	19.5	10.5	20
One adult from e. Peru ( <i>N. g. cornutus?</i> ).....	280	205	20	.....	.....
One adult from w. Ecuador ( <i>N. g. cornutus?</i> ).....	262	193	20.5	11	18.5



- [*Nyctibius jamaicensis* BONAPARTE, Consp. Av., i, 1850, 58 (Jamaica).—GRAY, Hand-list, i, 1869, 56, no. 608, part (Jamaica).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95, part (Jamaica).—CORY, List Birds West Ind., 1885, 16 (Jamaica).—SHARPE, Hand-list, ii, 1900, 79, part (Jamaica).  
*N[yc]tibius jamaicensis* NEWTON (A. and E.), Handb. Jam., 1881, 108.  
*N[yc]tibius jamaicensis (typicus)* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 16, part (Jamaica).  
 (?) *Nyctibius pallidus* GOSSE, Birds Jam., 1847, 49 (= albinotic specimen?); Illustr. Birds Jam., 1849, pl. 7.—BONAPARTE, Consp. Av., i, 1850, 58.—ALBRECHT, Journ. für Orn., 1862, 199.—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 286.—SCLATER, Proc. Zool. Soc. Lond., 1866, 119; Revised List Birds Jam., 1910, 10.—CORY, Auk, iii, 1886, 339; Birds West. Ind., 1889, 134; Cat. West Ind. Birds, 1892, 124 (crit.).—SCOTT, Auk, ix, 1892, 276 (crit.).  
 (?) [*Nyctibius*] *pallidus* GRAY, Hand-list, i, 1869, 56, no. 610.—CORY, List Birds West Ind., 1885, 16.  
 (?) *N[yc]tibius pallidus* NEWTON (A. and E.), Handb. Birds Jam., 1881, 108.  
*N[yc]tibius g[riseus] jamaicensis* RIDGWAY, Proc. Biol. Wash., xxv, May 4, 1912, 91, in text.

### NYCTIBIUS GRISEUS MEXICANUS (Nelson).

#### MEXICAN POTOO.

Similar to *N. g. jamaicensis* but larger and slightly paler.

*Adult male*.—Length (skin), 420; wing, 305; tail, 220; exposed culmen, 27; tarsus, 13; middle toe, 23.<sup>a</sup>

*Adult female*.—Length (skin), 435; wing, 304; tail, 216; exposed culmen, 25.5; tarsus, 13; middle toe, 24.<sup>a</sup>

Southeastern Mexico, in States of Puebla (Metlaltoyuca), Mexico (Valley of Mexico), Vera Cruz (Jalapa; Miradór; La Antigua), Oaxaca (Santa Efigénia; Tehuántepec), and Tabasco (Teapa) to Guatemala (Guatemala City; Vera Paz; Tactic); Honduras (Ruatán Island)? Western Mexico, in State of Sinaloa (Mazatlán; Presidio de Mazatlán).?<sup>b</sup>

*Nyctibius jamaicensis* (not *Caprimulgus jamaicensis* Gmelin) SALVIN, Ibis, 1866, 194 (Guatemala City, Guatemala); (?) 1889, 368 (Ruatán I., Honduras).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Santa Efigenia, Oaxaca).—HERRERA, La Naturaleza, (2), i, 1891, 322 (Valley of Mexico).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 625, part (Jalapa and La Antigua, Vera Cruz; Teapa, Tabasco; Tehuantepec, Oaxaca; Mazatlan, Sinaloa).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 399, part (Presidio de Mazatlan; Valley of Mexico; Jalapa, Mirador, and La Antigua, Vera Cruz; Santa Efigenia, Oaxaca; Teapa, Tabasco; near Guatemala City, Vera Paz, and Tactic, Guatemala; Ruatán I., Honduras?).

[*Nyctibius jamaicensis* GRAY, Hand-list, i, 1869, 56, no. 608, part (Guatemala).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75, part (Mexico).—SHARPE, Hand-list, ii, 1900, 79, part (Mexico).

*N[yc]tibius jamaicensis (typicus)* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 16, part (Mexico).

<sup>a</sup> One specimen, from Metlaltoyuca, Puebla (the male, type of the subspecies).

<sup>b</sup> Specimen from western Mexico not seen by me; possibly a different subspecies.

*Nyctibius cornutus* (not *Caprimulgus cornutus* Vieillot) CABANIS, Journ. für Orn., 1869, 314, footnote (Guatemala).

*Nyctibius jamaicensis mexicanus* NELSON, Auk, xvii, no. 3, July, 1900, 260 (Metlatoyuca, Puebla; coll. U. S. Nat. Mus.).

*[Nyctibius] g[riseus] mexicanus* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 91, in text.

### NYCTIBIUS GRISEUS COSTARICENSIS Ridgway.

#### COSTA RICAN POTOO.

Similar in size to *N. g. jamaicensis* but decidedly darker; inner webs of primaries with spots less distinct, often obsolete.

*Adult male*.—Length (skins), 365–395 (380); wing, 295–299 (297); tail, 220–225 (222.5); exposed culmen, 22–26 (24); tarsus, 12–12.5 (12.2); middle toe, 21.5–22 (21.7).<sup>a</sup>

*Adult female*.—Length (skins), 375–386 (380.5); wing, 276–290 (283); tail, 198–202 (200); exposed culmen, 20–20.5 (20.2); tarsus, 11.5–12 (11.7); middle toe, 18.5–19.5 (19).<sup>a</sup>

Costa Rica (Sarchí, Alajuela, 3,000 feet; El General; Guápiles).

*Nyctibius jamaicensis* (not *Caprimulgus jamaicensis* Gmelin) FRANTZIUS, Journ. für Orn., 1869, 314 (Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1882, 336 (Sarchí, Alajuela, Costa Rica, 3,000 ft.; crit.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 399, part (Sarchí, Costa Rica).

*[Nyctibius] jamaicensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95, part.—SHARPE, Hand-list, ii, 1900, 79, part.

*Nyctibius jamaicensis jamaicensis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 500 (El General and Guapiles, Costa Rica; crit.).

*[Nyctibius] jamaicensis (typicus)* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 16, part.

*Nyctibius griseus costaricensis* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 91 (Sarchí, Alajuela, Costa Rica; coll. U. S. Nat. Mus.).

### NYCTIBIUS GRISEUS PANAMENSIS Ridgway.

#### PANAMÁ POTOO.

Similar to *N. g. costaricensis* but still darker and size decidedly less.

*Adult male*.—Length (skins), 330–360 (344); wing, 270–290 (278.5); tail, 195–210 (201); exposed culmen, 18.5–23.5 (21.7); tarsus, 11–12.5 (11.9); middle toe, 19.5–21.5 (20.4)<sup>b</sup>

*Adult female*.—(None examined.)

Panamá (Lion Hill; Gatún; Natá, Coclé; Volcán de Chiriquí?) and Colombia (Concórdia, Antioquia; Bogotá).

(?) *Nyctibius jamaicensis* (not *Caprimulgus jamaicensis* Gmelin) SALVIN, Proc. Zool. Soc. Lond., 1870, 203 (Volcan de Chiriqui, Panama; crit.).<sup>c</sup>

<sup>a</sup> Two specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> May be the Costa Rican form, since birds from Chiriqui sometimes agree with those from Costa Rica instead of with those from eastern Panamá, a direct comparison being necessary to determine their status.

- Nyctibius jamaicensis* SCLATER, Proc. Zool. Soc. Lond., 1866, 129, part (monogr.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 531 (Concordia, Antioquia, Colombia).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 625, part (Concordia, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 399, part (Lion Hill, Panama; Colombia).
- [*Nyctibius*] *jamaicensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95, part.—SHARPE, Hand-list, ii, 1900, 79, part.
- N[nyctibius] jamaicensis (typicus)* HARTERT, Tierreich, Podarg., Caprim., Macropt., 1897, 16, part.
- Nyctibius griseus panamensis* RIDGWAY, Proc. Biol. Soc. Wash., xxv, May 4, 1912, 91 (Nata, Cocle, Panama; coll. U. S. Nat. Mus.).

Suborder STRIGES.<sup>a</sup>

## OWLS.

- =*Nocturni* ILLIGER, Prodr. Orn., 1811, 232.
- =*Nocturni* VIEILLOT, Analyse, 1816, 25.
- =*Ægoli* VIEILLOT, Analyse, 1816, 25.
- =*Striges* WAGLER, Naturl. Syst. Amphib., etc., 1830, 80.—NEWTON, Encyc. Brit., 9th ed., xviii, 1885, 47.—SHARPE, Cat. Birds Brit. Mus., ii, 1874, 1; Review Rec. At. Classif. Birds, 1891, 79.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, 197 (and of later editions).—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567.—BEDDARD, Struct. and Classif. Birds, 1898, 244.—GADOW, Classif. Vertebr., 1898, 36.—KNOWLTON, Birds of the World, 1909, 50.
- =*Accipitrinae nocturnae* NITZSCH, Syst. Pterylogr., 1840, 95.
- =*Accipitres nocturni* GRAY, Hand-list, i, 1869, pp. vi, 38.
- =*Nocturni* FITZINGER, Sitz. K. Acad. Wiss. Wien (Mat.-Nat. Classe), xxi, heft 2, 1856, 290.
- =*Strigidae* BONAPARTE, Prodr. Syst. Orn., 1840, 3; Consp. Gen. Av., i, 1850, 36.—KAUF, in Jardine's Contr. Orn., 1851, 119.—LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 15.—GRAY, Hand-list, i, 1869, pp. vi, 38.
- =*Strixidae* D'ORBIGNY, Voy. Am. Mérid., iv, pt. 3, 1839, 123.
- =*Strigomorphae* CARUS, Handb. Zool., Wirbelth., i, 1868, 75, 303.
- =*Nyctiarpages* SUNDEVALL, Met. Nat. Av. Disp. Tent., 1872, 103.
- =*Nyctiarpages* RIDGWAY, Bull. U. S. Nat. Mus., no. 50, pt. v, 1911, 298.
- =*Strigoidae* STEJNEGER, Sci. Rec., ii, May 15, 1884, 155.
- =*Strigiformes* SHARPE, Hand-list, i, 1899, 280.
- =*Podargoharpages* FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567.
- =*Strigidae (Nyctiarpages)* FUERBRINGER, Unters. Morph. Sys. Vög., ii, 1888, 1306.

Desmognathous or schizognathous Coraciiformes with feet desmopelmous, the flexor tendons of type I; coracoids connected; hypotarsus simple; myological formula A; two carotid arteries; syrinx bronchial; aftershaft absent or (in Tytonidæ) rudimentary; plumage soft (caprimulgine); primaries 11, and young ptilopædic.

Nasals holorhinal; maxillo-palatines thick and spongy, encroaching on the intervening valley; basipterygoid processes and vomer present; cranial walls widely separated by intervening spongy diploë; metasternum 2-4-notched; spina externa sterni present, spina interna

<sup>a</sup> In the Key to the Suborders of Coraciiformes, on p. 298 of Part V of this work, the Suborder name *Nyctiarpages* is used instead of *Striges*.



absent; clavicle weak and nearly cylindrical, about equal in length to sternum; præcoracoid processes produced forward to meet the clavicle, beneath basal process of scapula; ectepicondylod process of humerus small; ramphotheca simple, raptorial, with ceroma; tibia more than twice as long as tarsus, without bony ridge for extensor tendons; hallux more than half as long as fourth toe and on a level with anterior toes; fourth (outer) toe freely reversible, shorter than second (inner) toe; basal phalanx of middle toe not longer than second phalanx and much shorter than third; basal phalanx of second (inner) toe much abbreviated; ambiens, accessory femorocaudal, semitendinosus, and extensor secundariorum muscles and biceps slip absent; flexor tendons of type I, the flexor longus hallucis leading to the hallux, the flexor perforans digitorum leading to the second, third, and fourth toes; œsophagus destitute of dilated crop; cæca large, unusually long, club-shaped; syrinx bronchial, with one pair of muscles; intestinal convolutions of type VI; gall-bladder present (except in genus *Speotyto*); oil-gland nude; spinal pteryla well defined on neck, forked between shoulders; aftershaft absent in Bubonidæ, rudimentary in Tytonidæ; adult downs wanting or present on apteria only; primaries 11, but the eleventh (outermost) one rudimentary; secondaries 11-18, rectrices 12 (only 10 in genus *Micropallas*, occasionally 13 in *Speotyto*).

General external characters of the Striges may be described as follows: Eyes directed forward and surrounded by a radiating system of feathers which is bounded, except anteriorly, by a line or rim of small, narrow, stiff, compactly webbed, differently formed, and somewhat recurved feathers ("facial rim" or "border"); loreal feathers antrorse, long, and dense, with bristle-like tips, covering base of bill and usually hiding nostrils; plumage in general very soft and lax, of fine downy texture; outer webs of primaries, especially the outer one, with tips of the barbs recurved; feathers on sides of forehead or crown frequently elongated into ear-like or horn-like tufts; tarsus usually and toes frequently feathered, the feathering (when present) soft and dense (that on toes sometimes sparse and bristle-like); bill raptorial, but maxillary tomium never toothed nor notched; feet raptorial, but outer toe freely reversible.

Pterylographic characters of the Striges are thus described in detail by Mr. Hubert Lyman Clark:<sup>a</sup>

"The head is more or less fully feathered above, and especially densely in front. The upper cervical tract usually commences broad, but rapidly becomes narrow, and forks between the shoulders more or less deeply. The dorsal tract is very incomplete anteriorly and is only indistinctly connected with the cervical forks, but posteriorly it

<sup>a</sup> Proc. U. S. Nat. Mus., xvii, no. 1018, 1895, 559, 566.

becomes a strong single band, which forks behind so as to more or less surround the oil gland. The humeral tracts are strong and usually broad and the parapterum is very evident. There are two complete rows of primary coverts, and on the forearm there are seven or eight rows of feathers, of which the lower three or four are true secondary coverts. The femoral tract is very strong and evident, running obliquely across the upper end of the tibia from the knee, along on the posterior edge of the femur. The tibia and tarsus are usually very completely covered with feathers, and often the toes also. At the base of the gonys the infra-mandibular region is very thickly feathered, but this dense patch divides abruptly and either passes up on each side and runs along the ear-conch, as in those owls in which this conch is fully developed, or, as in other species, disappears on the rami of the lower jaw. The rest of the chin and throat are very sparsely feathered in most owls, but in others it is fully covered. The lower cervical tract is narrow and is divided on the neck so as to pass down on either side to form the strong sternals. It is also connected with the humerals, and especially with the triple row of small feathers on the lower edge of the patagium, while all of the upper outer corner of the breast is usually more or less feathered. From the lower end of the sternal tract there runs a strong hook over to the hypopterygium, which is itself very evident. There are two rows of primary and three or four of secondary under coverts. The ventral tracts commence on the breast, usually near the furcula, and seem to be fused with the sternals at first, but soon separate from them and run down on either side almost to the anus, becoming very narrow on the belly. *Strix* [i. e. *Tyto*] shows a very peculiar modification of this typical form, in the fusion again of the sternal and ventral tracts at the posterior end of the former. The post-anal tract, comprising the under-tail coverts, is strong and very conspicuous in the larger species. All of the specimens of *Striges* examined agreed in the following details:

"Aftershafts wanting. True down wanting. Oil gland not tufted. Primaries 11, the eleventh very small. Rectrices 12 (except *Micropallas*). Alula feathers 4. Wing aquincubital."

It is now definitely settled and pretty generally admitted that the owls are much less intimately related to the true Birds of Prey (Accipitres) than to the Coraciiformes, among which their nearest relatives, apparently, are the Nycticoraciæ, especially the suborder Steatornithes (represented only by the Guacharo or Oil Bird, *Steatornis caripensis*), though, in reality, the gap between these and the *Striges* is a very considerable one. Nevertheless, the resemblance to the Accipitres is mainly one of adaptation, both groups being eminently "raptorial" in their nature, and therefore provided with a strongly hooked bill and relatively long, strongly curved, and sharp

claws. Even in the character of the bill and feet, however, the resemblance is largely a superficial one, and when a close examination is made many constant differences become obvious in the structural details of the bill and feet in the two groups. Thus in the Striges the maxillar tomium is never notched, toothed, nor lobed; the "cere" is of very different character, consisting, in reality, of the usual membrane covering the unperforated part of the nasal fossæ, continued across the mesorinal portion of the culmen, the so-called cere being thus wholly post- and supra-nasal, usually with the lateral (post- or circum-nasal) portion more or less inflated. It is in the structure of the feet, however, that the greatest difference is observable.

"The structure of the feet and more particularly the toes of owls is very peculiar. When perching, the arrangement of the toes is zygodactyl; that is, two in front and two behind,<sup>a</sup> but when an owl pounces upon its prey, the four toes point to the four quarters of a circle. Again, when the bird alights upon the ground, the arrangement is still different, being more like that of a typically avian foot—three toes in front and one behind. This facile adjustment to different conditions makes the foot of great efficiency in all its functions."<sup>b</sup> A single member of the Accipitres, the genus *Pandion*, "shares the digital elasticity of the owls," and also, alone in that order, possesses the bony tarsal ring or loop, a character evidently correlated with the digital manipulation.

The following special papers pertaining to the structure and classification of owls are commended to those who desire further information on the subject:

COLLETT, ROBERT.—Craniets og Öreaabningernes Bygning hos de nordeuropæiske Arter af Familien Strigidæ.

An English translation edited and annotated by Dr. R. W. Shufeldt was published in the *Journal of Morphology*, xvii, 1900, 119–176, pls. 15–20+7 text cuts, under the title "Professor Collett on the Morphology of the Cranium and the Auricular Openings of the North-European species of the Family Strigidæ," the illustrations from the original paper.

CLARK, HUBERT LYMAN.—The Pterylography of certain American Goatsuckers and Owls. *Proc. U. S. Nat. Mus.*, xvii, no. 1018, 1895, 551–572; 11 cuts in text. (Owls treated on pp. 559–566, a key to the genera, based on pterylographical characters alone, being given on p. 560.)

PYCRAFT, W. P.—A Contribution toward our Knowledge of the Morphology of the Owls. *Trans. Linn. Soc.*, 2d ser., Zool., vii, 1898, 223–275, pls. 24–29.

PYCRAFT, W. P.—On the Pterylography of *Photodilus*. *The Ibis*, Jan., 1903, 36–48, pl. 2; 6 cuts in text. (Includes a "Revised Key to the Subfamilies and Genera of the Family Asionidæ," on pp. 47, 48.)

BEEBE, C. WILLIAM.—Owls of the Nearctic Region. Reprinted from the Eleventh Annual Report of the New York Zoological Society. Pp. 38, 1 full-page (frontispiece) and 15 text cuts, all reproduced from photographs. (1907.)

<sup>a</sup> This is not strictly correct, for when perching the outer toe usually stands nearly at right angles with the middle toe and hallux, though often inclined more backward than forward.

<sup>b</sup> Beebe: *Owls of the Nearctic Region*, p. 11



## KEY TO THE FAMILIES OF STRIGES.

- a.* Palatines straight, nearly parallel, approximately the same width throughout, almost concealing maxillo-palatines, which are broader from above downward than from side to side; prefrontal process of ethmoid thick and rounded; inter-orbital region thick, without fenestra; metasternum shallowly 2-notched or entire; no manubrial process; sternal crest dilated; furcula coalesced with keel of sternum; third (middle) toe little if any longer than second (inner) toe, its second phalanx considerably longer than basal phalanx, its claw notched or serrated; tarso-metatarsus without bony ring or loop; feathers of the planta tarsi reversed (pointing upward); none of the primaries emarginate on inner web, the outermost developed (tenth) longer than the eighth; tail emarginate; ventral pteryla with outer branch united to main stem posteriorly; oil gland with two or three filoplumes at tip *a*.....**Tytonidæ** (p. 598).
- aa.* Palatines curved, much expanded posteriorly; maxillo-palatines largely exposed, very broad from side to side; prefrontal process of ethmoid a thin plate; inter-orbital thin, often fenestrated; metasternum deeply 4-notched; manubrial process present; sternal crest narrow; furcula incomplete, free from keel of sternum; third (middle) toe much longer than second (inner) toe, its second phalanx about equal in length to the basal phalanx, its claw not notched or serrated; tarso-metatarsus with a bony ring or loop on under surface of upper end; feathers of planta-tarsi (when present) not reversed (always pointing downward); at least one (sometimes six) primaries with inner web emarginated or sinuated, the outermost developed (tenth) primary shorter than eighth; tail usually more or less rounded, rarely truncate, never emarginate; ventral pteryla with outer branch free from main stem posteriorly; oil gland without filoplumes.  
**Bubonidæ** (p. 617).

## Family TYTONIDÆ.

## THE BARN OWLS.

=*Strigina* VIGORS, Zool. Journ., ii, Oct., 1825, 393.

=*Striginæ* BONAPARTE, Prodr. Syst. Orn., 1840, 4.—CASSIN, in Rep. Pacific R. R. Surv., ix, 1858, 47.—GADOW, in Bronn's Thier-Reich, Vög., ii, 1891, 236, 301.

>*Striginæ* BONAPARTE, Consp. Av., i, 1849, 54 (includes genus *Phodilus*).—GRAY, Hand-list, i, 1869, 52.

=*Strigidæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. vii, 116.—SCLATER, Ibis, 1880, 403.—SHARPE, Rev. Classif. Birds, 1891, 79; Hand-list, i, 1899, 300.

>*Strigidæ* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 289 (includes *Phodilus*).

=*Aluconidæ* COUES, Key N. Am. Birds, 2d ed., 1884, 498, 500.

=*Aluconinæ* BARROWS, Stand. Nat. Hist., iv, 1885, 346, in text.

=*Alucinæ* NEWTON, Dict. Birds, 1894, 674, in text.

Striges with inner toe as long as middle toe, claw of middle toe with inner edge produced and pectinated or serrate; feathers of planta tarsi recurved or reversed; outermost developed primary (tenth) longer than eighth, none of the primaries with inner web emarginated or sinuated; tail emarginated; face heart-shaped, with the lower apex very prominent.

<sup>a</sup> The genus *Phodilus* presents exceptions to some of these characters; but its true position can hardly be considered as definitely settled. See footnote on p. 618.

Sternum without manubrium, the metasternum entire or else with but one notch on each side; clavicles united, forming a furculum, and solidly joined to the keel of the sternum; tarso-metatarsus without a bony ring or arch over the extensor tendon of the toes; third (middle) toe with second phalanx decidedly longer than the basal phalanx; skull relatively long and narrow, with palatines nearly parallel to each other, approximately the same width throughout, almost concealing the maxillo-palatines, which are broader from above downward than from side to side; prefrontal process of ethmoid consisting of rounded bones of some width; interorbital region not forming a thin plate anteriorly, but of considerable thickness.

The pterylography is thus described by Mr. Hubert Lyman Clark:<sup>a</sup>

"The head is more uniformly feathered above<sup>b</sup> and shows no signs of longitudinal rows, but the infra-mandibular region is scarcely feathered at all, except for the very narrow lower cervical tract, which begins at the base of the gonys and extends nearly to the furcula before forking widely. It is, however, slightly divided for some distance before it actually forks, so that the upper part of each branch is abruptly wider than the lower, although there is no true inner branch given off. The upper cervical tract is very narrow, while the humerals are narrower than in any other genus, and the parapterum is weak. The femorals are strong, but very diffuse, and are scattered over most of the femur. The feet are not feathered quite to the toes, but the latter are very hairy, the sternal tract is fused with the ventral, not only at its origin near the furcula, but also at the other end of the breast, so that the tracts are really one; very broad on the sternum, and containing a longitudinal apterium, and becoming abruptly narrow on the belly. The hypopterygium is very strongly marked, and the hook connecting it with the sternal tract is composed of larger feathers, and they are much more numerous than in the other owls. Indeed, the whole breast is much more thickly feathered than in *Asio*. Another remarkable peculiarity is the formula for the comparative lengths of the *rectrices*. In all the other owls the middle pair of tail feathers is the longest and the external pair shortest, so that the formula is 1, 2, 3, 4, 5, 6. In *Strix* [i. e., *Tyto*], however, this is exactly reversed, the outer pair being the longest and the formula reading 6, 5, 4, 3, 2, 1. There are fifteen secondaries and the primaries rank as follows: 9, 8, 10, 7, 6, 5, 4, 3, 2, 1, 11."

This family includes a single genus.<sup>c</sup> *Phodilus* Isidore-Geoffroy was formerly included, on account of its superficial resemblance to *Tyto*, but has since been found to more nearly agree structurally with

<sup>a</sup> Proc. U. S. Nat. Mus., xvii, 1895, 565.

<sup>b</sup> As compared with that of *Asio wilsonianus* and other Bubonidæ.

<sup>c</sup> The fossil (extinct) genus *Badiostes* Ameghino is placed in this family by Dr. Sharpe (Hand-list, i, 1899, 302).

the Bubonidæ.<sup>a</sup> The range of *Tyto* is nearly cosmopolitan, but there is no representative in Madagascar, New Zealand, the Hawaiian Islands, nor in colder regions. About twenty-seven species (including subspecies) are recognized, of which nine are American.

### Genus TYTO Billberg.

- Aluco* (not of Link, 1807)<sup>b</sup> FLEMING, Philos. Zool., ii, 1822, 236. (Type, by monotypy, *Strix flammea* Linnæus, 1766, not of Pontoppidan, 1763, =*Strix alba* Scopoli. See Newton, Ibis, 1876, 104; Allen, Auk, xxv, 1908, 288-291.)
- Tyto* <sup>c</sup> BILLBERG, Synopsis Faunæ Scand., i, pars 2, 1828, tab. A. (New name for *Strix* Savigny nec Linnæus; type, *Strix flammea* Linnæus, 1766, not of Pontoppidan, 1763, =*S. alba* Scopoli. See Mathews, Novit. Zool., xvii, 1910, 500.)
- Flammea* FOURNEL, Fauna de la Moselle, 1836, 101. (Type, *Flammea vulgaris* Fournel=*Strix alba* Scopoli. See Mathews, Austral Avian Record, i, 1912, 104.)
- Hybris* NITZSCH, Pterylographiæ Avium, Pars prior, 1833, 16. (Type, *Strix flammea* Linnæus=*S. alba* Scopoli.)
- Stridula* SELYS-LONGSCHAMP, Fauna Belg., 1842, 60. (Type, *Strix flammea* Linnæus=*S. alba* Scopoli.)
- Eustrinx* WEBB and BERTHELOT, Orn. Canar., 1841, 8. (Type, *Strix flammea* Linnæus=*S. alba* Scopoli.)
- Megastrix* KAUP, Isis, 1848, 769; Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 249. (Type, *Strix tenebricosa* Gould.)
- Glaux* (not of Morris, 1837) BLYTH, Journ. Asiat. Soc. Bengal, xix, 1850, 513. (Type, *Strix candida* Tickell.)
- Scelostrix* KAUP, Jardine's Contr. Orn., 1852, 119; Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 248. (Type, *Strix candida* Tickell.)
- Dactylostrix* KAUP, Jardine's Contr. Orn., 1852, 119; Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 248. (Type, *Strix personata* Vigors=*S. novæ-hollandiæ* Stephens.)
- Glyphidiura* REICHENBACH, Av. Syst. Nat., 1850, pl. 92, fig. 2. (Type, *Strix capensis* Smith.)

Medium-sized Striges (Tytonidæ) with complete and conspicuous facial ruff, relatively small eyes, elongated bill, long legs with feathering on posterior side of tarsus reversed (pointed upward), inner toe as long as middle toe, claw of middle toe with inner edge produced and pectinated, tenth (apparent outermost) primary nearly to quite as long as ninth, its inner web not sinuated, tail emarginate, and head without ear-tufts.

Bill elongated, compressed, the top of cere nearly as long as chord of culmen, straight, somewhat depressed. Nostril opening in anterior end of cere, oval, nearly horizontal. Eyes very small (beadlike), surrounded by a very conspicuous line of differently formed feathers—the outline of the facial disk, viewed from the front, distinctly

<sup>a</sup> See Beddard, Ibis, 1890, 298.

<sup>b</sup> For a genus of Mollusks; Besch. Nat. Samml. Univ. Rostock, 3 Abth., 1807, 130.

<sup>c</sup> *Turó*, the night owl. (Richmond.)



heart-shaped.<sup>a</sup> Ear-opening relatively small, subquadrate, with a rather small anterior subquadrate operculum. Wing very long, the longest primaries exceeding distal secondaries by more than one-third the total length of wing; tenth (apparent outermost) or ninth primary longest, neither with inner web sinuated or emarginated. Tailless than half as long as wing, more or less distinctly emarginated. Tarsus very long (nearly to quite twice as long as middle toe without claw), densely clothed with short, soft feathers, those on the posterior side reversed (inclined upward); toe scantily bristled; inner toe as long as middle toe, the outer much shorter; claws very long and sharp, that of middle toe with its inner edge produced and pectinated.

*Coloration*.—Plumage with either white, buff, or tawny prevailing, this usually more or less freckled or otherwise variegated (at least on the upper parts) with brown or dusky.

*Range*.—Nearly cosmopolitan, but wanting in colder regions, New Zealand, Polynesia, and Madagascar. (Nearly 30 forms recognized, of which about one-third are American.)

The American barn owls comprise two very distinct groups; one mainly continental (occurring off the continent only on the Bahamas, Cuba, the Caymans, and Jamaica), and characterized by large size (wing 312–360 mm.), the other exclusively insular, and distinguished by small size (wing 226–254 mm.), together with peculiarities of coloration. There can be no question as to the specific distinctness of the two groups, the former of which includes a single species divided into a number of geographic forms (connected, in geographic sequence, by intermediate specimens), while the latter as certainly represent four species, one each peculiar to Haiti, the Lesser Antilles, Curacao, and the Galapagos Archipelago. All, in my opinion, are specifically distinct from the European *T. albus*, for not only are the distinctive characters of coloration, dimensions, etc., sufficiently marked but their geographic isolation prevents the possibility of intergradation.

#### KEY TO THE SPECIES OF TYTO.

- a. Larger (wing 312–360 mm.). (*Tyto perlata*.)
  - b. Secondaries always conspicuously lighter in color than rest of wing, often white, sometimes immaculate; under parts never wholly ochraceous or buffy; facial border white to ochraceous-buff. (Cuba, Isle of Pines, Grand Cayman, Cayman Brac, and Jamaica.) ..... ***Tyto perlata furcata*** (p. 602).
  - bb. Secondaries never (?) conspicuously lighter in color than rest of wing, rarely at all paler, never white; under parts frequently ochraceous or buff (except in *T. p. lucayana*?); facial border ochraceous-buff to dark brown, rarely whitish.
  - c. Paler, the under parts usually white; upper parts usually with much ochraceous or buff, this sometimes predominating.

<sup>a</sup> The peculiar physiognomy of the barn owl is responsible for the common name "Monkey-faced Owl" very generally applied to *T. pratincola* in the United States.

- d. Upper parts with less of mottled grayish, bright ochraceous-buff predominating; dusky spots on inner webs of outer primaries smaller, sometimes obsolescent. (New Providence Island, Bahamas.)  
**Tyto perlata lucayana** (p. 604).
- dd. Upper parts with more of mottled grayish (except in some Pacific coast specimens), this usually predominating; dusky spots on inner webs of outer primaries larger. (United States and Mexico; south to eastern Nicaragua in winter.).....**Tyto perlata pratincola** (p. 605).
- cc. Darker, the under parts usually ochraceous or tawny-buff (rarely white); upper parts with little of ochraceous or tawny, dusky mottled grayish greatly predominating. (Guatemala to Panama.)....**Tyto perlata guatemalæ** (p. 610).
- aa. Smaller (wing 226-254 mm.).
- b. Face and under parts white. (Island of Curaçao, Dutch West Indies.)  
**Tyto bargei** (p. 611).
- bb. Face not white; under parts tawny-ochraceous, tawny-buff, or cinnamon-buff.
- c. Face silvery gray. (Island of Haiti.).....**Tyto glaucops** (p. 612).
- cc. Face vinaceous-brown (more or less deep).
- d. Under parts spotted (more or less) with dusky. (*Tyto insularis*.)
- e. Upper parts more spotted, the white spots larger and more numerous; under parts with dusky spots larger or more numerous. (Islands of St. Vincent, Grenada, and Grenadines, Lesser Antilles; Barbados?)  
**Tyto insularis insularis** (p. 613).
- ee. Upper parts more uniform in color, with white spots smaller and less numerous, sometimes obsolete; under parts with dusky spots smaller or less numerous. (Island of Dominica, Lesser Antilles.)  
**Tyto insularis nigrescens** (p. 615).
- dd. Under parts barred with dusky. (Galapagos Archipelago.)  
**Tyto punctatissima** (p. 616).

### TYTO PERLATA FURCATA (Temminck).

#### WHITE-WINGED BARN OWL.

Similar to the lighter phase of *T. p. pratincola*,<sup>a</sup> but with secondaries and tail white, in abrupt contrast with general color of rest of upper parts, the tail, however (more rarely the secondaries also) usually with more or less distinct spots or bands of dusky; under parts always white, though sometimes tinged with buff; averaging decidedly larger.

*Adults (sexes alike).*—General color of upper parts a mixture of clear ochraceous-buff or cinnamon-buff coarsely vermiculated gray and dusky (both varying in intensity), the former usually predominating, the feathers of the mottled grayish portion having a subterminal small elongated spot of white, preceded, and often margined, with blackish; secondaries white, or white and ochraceous-buff, often immaculate, but frequently with more or less distinct indications of two or three dusky bands or transverse series of dusky spots; primaries ochraceous-buff on outermost passing into pale buff or white on proximal quills (rarely wholly white), usually with a few dusky spots or mottlings, at least on some of the quills; tail white,

<sup>a</sup> See p. 605.

often immaculate, sometimes buff and white, sometimes with three or four distinct but interrupted or incomplete dusky bands; face white, or buffy white, relieved by a spot of vinaceous-brown or burnt umber in front of eye; facial ring white or white and buff, sometimes with feathers of lower portion tipped with brown or black; under parts white (sometimes more or less washed or suffused with ochraceous-buff), sometimes wholly immaculate, but usually sparsely flecked with triangular, sagittate, or rhomboidal specks of blackish; bill dull yellowish; iris dark brown; toes and lower part of tarsi light grayish brown (in dried skins).

*Adult male*.—Length (skins), 355–385 (362); wing, 316–341 (332.5); tail, 137–149 (143.2); culmen (from cere), 21.5–25.5 (23); tarsus, 67–74 (71.6); middle toe, 37–43 (39.5).<sup>a</sup>

*Adult female*.—Length (skins), 365–430 (385); wing, 328–358 (337.9); tail, 134–152 (144.2); culmen (from cere), 23–25.5 (24.1); tarsus, 70.5–77 (73.3); middle toe, 39.5–43.5 (41.2).<sup>a</sup>

Islands of Cuba (Guamá; El Guamá; Cabañas; Remédios; Holguín; Monte Verde; Consolación del Sur; Trinidad; Figuabas), Isle of Pines (Santa Seville), Grand Cayman, Cayman Brac, and Jamaica (Moneague; St. Catherines; Priestmans River).

*Strix furcata* TEMMINCK, Pl. Col., ii, livr. 73, July, 1827, pl. 432, and text (Cuba; Mus. Pays-Bar).—D'ORBIGNY, in La Sagra, Hist. Nat. Cuba, Ois., 1839, 34.—GUNDLACH, Journ. für Orn., 1855, 467 (Cuba); 1871, 268 (Cuba; crit.), 377 (Cuba; habits); Repert. Fisico-Nat. Cuba, i, 1865, 227.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306 (Cuba).—CORY, Cat. West Ind. Birds, 1892, 140 (crit.).

[*Strix*] *furcata* GUNDLACH, Journ. für Orn., 1861, 324 (Cuba).—SHARPE, Hand-list, i, 1899, 300 (Jamaica).

*Strix flammea*, var. *furcata* RIDGWAY, in BAIRD, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1884, 12, footnote.

*Strix flammea furcata* CORY, Auk, iii, 1886, 464 (synonymy; descr.; geog. range), 502 (Grand Cayman); Birds West Ind., 1889, 187.—SCOTT, Auk, ix, 1892, 127 (Jamaica; habits).—FIELD, Auk, xi, 1894, 124 (Jamaica).—MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 23 (Figuabas, e. Cuba).—LOWE, Ibis, 1911, 149 (Grand Cayman).

<sup>a</sup> Twelve specimens.

Locality.	Wing.	Tail.	Culmen, from cere.	Tarsus.	Middle toe.
MALES.					
Eight adult males from Cuba.....	329.9	142.8	22.4	71.2	39.5
Four adult males from Jamaica.....	337.7	143.8	24.1	72.4	40.1
FEMALES.					
Seven adult females from Cuba.....	337.1	143.6	24	73.4	41.4
One adult female from Isle of Pines.....	340	144	23.5	72	41
Four adult females from Jamaica.....	338.7	145.5	24.4	73.2	41

I am unable to detect any constant differences in coloration in specimens from different islands.



- [*Strix flammea* var. *americana*] e. *furcata* COUES, Birds Northwest, 1874, 299 (synonymy).  
*Strix pratincola furcata* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 125 (Cuba).—CORY, Cat. West Ind. Birds, 1892, 10, 100 (Cuba; Isle of Pines; Cayman Brac; Jamaica); Auk, ix, 1892, 272 (Cuba).—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 296 (near Trinidad, s. Cuba).—BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 202 (Isle of Pines).  
*Aluco flammea furcata* ROTHSCHILD, Bull. Brit. Orn. Club, xiv, no. cviii, June 25, 1904, 89.  
 [*Strix*] *flammea fuscata* CORY, List Birds West Ind., 1885 (and revised ed., 1886), 21 (Cuba; Jamaica).  
*T[yto] alba furcata* HARTERT, Vög. Paläarkt. Fauna, heft. viii (bd. ii, 2), Aug., 1913, 1039.  
*Strix cubæ* BREHM (C. L.), Handb. Natur. Vog. Deutschlands, 1831, 104 (Cuba).  
*Strix pratincola* (not of Bonaparte) GOSSE, Birds Jamaica, 1847, 23.—SCLATER, Proc. Zool. Soc. Lond., 1861, 79 (Jamaica; crit.); Rev. List Birds Jamaica, 1910, 12.—ALBRECHT, Journ. für Orn., 1862, 204 (Jamaica).—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 153 (Jamaica).  
 (?) *Strix flammea pratincola* MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 23 (Figueras, e. Cuba).  
*Nyctea nivea* (not *Strix nivea* Thunberg) GUNDLACH, Journ. für Orn., 1855, 466 (Cuba; crit.; see Gundlach, Journ. für Orn., 1861, 403).  
 [*Strix*] *perlata* (not of Lichtenstein) GRAY, Hand-list, i, 1869, 52, no. 572, part.  
 [*Strix*] *flammea* (not of Linnæus) SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116, part.

#### TYTO PERLATA LUCAYANA Riley.

##### BAHAMA BARN OWL.

Similar to *T. p. furcata* but remiges and tail darker (not distinctly different in coloration from rest of upper parts), and upper parts with relatively more of ochraceous-buff and less of mottled grayish; similar also to *T. p. pratincola*, but with relatively more of ochraceous-buff on upper parts than in the average of that form, white specks on upper parts less distinct, dusky spots on inner webs of outermost primaries smaller (sometimes obsolescent), and feet larger.

*Adult male*.—Length (skins), 355–373 (364); wing, 324–329 (326.5); tail, 132.5–135 (132.7); culmen (from cere), 22; tarsus, 74–75 (74.5); middle toe, 37–40 (38.5).<sup>a</sup>

*Adult female*.—Length (skin), 350;<sup>b</sup> wing, 352–356 (354);<sup>a</sup> tail, 139–149 (144);<sup>a</sup> culmen (from cere), 22–24.5 (23.2);<sup>a</sup> tarsus, 74.5;<sup>b</sup> middle toe, 39.5.<sup>b</sup>

Bahama Islands (New Providence; Inagua?;<sup>c</sup> Abaco?;<sup>c</sup> Andros?).<sup>c</sup>

*Strix flammea* var.? BRYANT, Proc. Bost. Soc. N. H., xi, 1867, 65 (Inagua and New Providence islands, Bahamas).

*Strix flammea* var. *pratincola* (not *Strix pratincola* Bonaparte) CORY, Birds Bahama Is., 1880, 125 (New Providence Island).—BONHOTE, Ibis, 1899, 516 (New Providence).

[*Strix*] *flammea pratincola* CORY, List Birds West Ind., 1885, 21 (Bahamas).

<sup>a</sup> Two specimens.

<sup>b</sup> One specimen.

<sup>c</sup> I have not been able to examine specimens from these islands.

*Strix flammea pratincola* CORY, Auk, iii, 1886, 466 (Bahamas; synonymy; descr.).—BONHOTE, Ibis, 1903, 295 (Abaco).

*Strix pratincola* NORTHROP, Auk, viii, 1891, 75 (Andros Island; habits).—CORY, Auk, viii, 1891, 294 (New Providence); Cat. Birds West Ind., 1892, 100, part (New Providence, Andros, and Great Inagua Islands, Bahamas).—BANGS, Auk, xvii, 1900, 287 (New Providence; crit.).

*Tyto perlatus lucayanus* RILEY, Proc. Biol. Soc. Wash., xxvi, June 30, 1913, 153 (New Providence, Bahamas; coll. U. S. Nat. Mus.).

### TYTO PERLATA PRATINCOLA (Bonaparte).

#### AMERICAN BARN OWL.

Similar to *T. p. lucayana*, but (except in some Pacific coast specimens) with less of ochraceous-buff on upper parts, where the white specks on mottled grayish portions are more distinct; facial border usually much darker; feet smaller.

*Adults (sexes alike).*<sup>a</sup>—*Average plumage:* Ground-color of upper parts bright ochraceous-buff or orange-ochraceous, but this overlaid, more or less continuously, with a delicate mottling of dusky and grayish white, forming a mottled grayish effect, each feather, except remiges and rectrices, with a median streak of black on distal portion, inclosing a small cordate, roundish, or guttate (rarely linear) subterminal spot of white; remiges with the darker mottlings condensed into indistinct transverse bands, which are about four in number on secondaries and five on primaries; tail varying from ochraceous-buff to white, more or less mottled with dusky and crossed by about five more or less distinct bands of mottled dusky; face white, more or less tinged with vinaceous-brown, and with an area of dark vinaceous-brown in front of and narrowly surrounding eye; facial circle or rim soft ochraceous-buff or orange-ochraceous above (down to ears), deeper ochraceous below, where feathers of posterior border are tipped, more or less broadly, with dark brown or brownish black; under parts white, but this more or less extensively suffused or overlaid by ochraceous-buff and with more or less numerous small but distinct spots or dots of black. *Dark extreme:* Under parts wholly ochraceous-buff or light ochraceous, speckled, more or less, with black; upper parts as in average plumage or somewhat darker; face more strongly tinged with vinaceous-brown. *Light extreme:* Face (except anteorbital spot) and entire under parts pure white, the latter sometimes immaculate; facial rim white, with tips of feathers (in part, at least) orange-buff; remiges and tail sometimes uniformly mottled, or the latter sometimes white, with more or less well-developed bands of mottled dusky.

*Nestling.*—Entirely immaculate pure white.

<sup>a</sup> Apparently, however, females *average* darker than males; that is to say, in the extensive series examined there are more females than males among the darker colored specimens and more males than females among those with pure white under parts.

*Adult male*.—Length (skins), 346–385 (361); wing, 314–345 (328.6); tail, 126–152.5 (138.1); culmen (from cere), 21–24 (22.1); tarsus, 67.5–77.5 (73.3); middle toe, 34–41.5 (37.5).<sup>a</sup>

*Adult female*.—Length (skins), 332–397 (366); wing, 320–360 (336.9); tail, 127–157.5 (141.1); culmen (from cere), 21–23.5 (22.6); tarsus, 66.5–76 (70.9); middle toe, 35.5–41 (38.7).<sup>a</sup>

Greater part of United States and Mexico; breeding in Lower and Upper Austral zones, north to Long Island (Flushing), New Jersey, Pennsylvania (Berks County), western New York, Ohio (Pickaway County), northern Indiana (Wabash County), northern Illinois (Champaign County), southern Nebraska, Colorado (Denver; Pueblo; Wet Mountain Valley; Rocky Ford; Burlington), and upper Sacramento Valley, northern California, and occurring, more or less irregularly, farther northward to Massachusetts (Springfield; Lynn; Westport, December; Worcester, May; Weston, November), Vermont (Lyndon, June), Ontario (Long Point, November; Toronto, September; Hamilton), Michigan (near Northville, October; lower

<sup>a</sup> Eighteen specimens.

Locality.	Wing.	Tail.	Culmen, from cere.	Tarsus.	Middle toe.
MALES.					
Five adult males from Maryland, District of Columbia, and Virginia.....	338.4	143.8	22.3	75.4	39.2
One adult male from Arizona.....	345	145	21.5	74.5	37.5
Three adult males from California.....	325	142.3	22	69.7	34.5
Four adult males from s. Lower California.....	324	134	22	71.5	36.7
Two adult males from Jalisco.....	316	129.7	22.5	73.5	35.5
One adult male from Chiapas.....	314	126	21	75	38.5
One adult male from e. Nicaragua (Rio Escondido, Jan.).....	325	132	23	74.5	38
FEMALES.					
Four adult females from Delaware to North Carolina.....	340.8	146	23.1	72.9	39.6
One adult female from Missouri.....	354	148	23.5	75.5	39
Two adult females from Arizona.....	326	136	22.5	70.2	37.5
Three adult females from California.....	332	142.3	21.8	71.3	39
Two adult females from s. Lower California.....	336	141.7	21.7	68	37.2
Two adult females from Sinaloa.....	337.5	137.2	23	70.7	36.7
Three adult females from Jalisco.....	342.3	141.3	23	69	39.7
One adult female from Chiapas.....	326	127	22	69	39.5

I am unable to discover constant differences of coloration between specimens from the eastern and western United States or between these and those from Mexico. Most of the specimens examined from the Pacific coast district (Cape San Lucas to Oregon) have an unusual amount of ochraceous-buff or tawny-ochraceous in the plumage of the upper parts, and it is possible that the birds from that region may prove separable when a larger series has been examined. The specimen from the Rio Escondido, eastern Nicaragua, represents the extreme white-bellied phase and is nowise, that I can see, different from northern examples.



Detroit River; Port Nouillee; Wayne County, October; Sault Ste. Marie), Wisconsin, Minnesota, Oregon (Klamath Basin), and southern British Columbia (near mouth of Fraser River, 1 specimen); southward over whole of Mexico, in States of Tamaulipas (Santa Fe de Presas), Nuevo León, Coahuila (head of Las Vacas Creek), Chihuahua, Sonora, Sinaloa (Presidio de Mazatlán; Escuinapa), Colima (Rio de la Armeria; Colima), Jalisco (Guadalajara; Ocotlán; Las Canoas; San Mateo), Aguas Calientes, Guanajuato, Mexico (Valley of Mexico; Mexicalcingo), Puebla (Chietla; Llano de Chapulco; Forres de la Catedral), Vera Cruz (Orizaba), Oaxaca (Cacoprieto; Tehuantepec City), Chiapas (Tonalá; San Bartolomé), and Yucatan (Chichen Itza; Izamál; Tizimín; Calotmúl), and Territory of Tepic (Tres Marias Islands), and whole of Lower California, including Los Coronados and Todos Santos Islands; southward in eastern Central America to eastern Nicaragua (Rio Escondido), at least in winter.

*Strix flammea* (not of Linnæus) WILSON, Am. Orn., vi, 1812, 57, pl. 50, fig. 2.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 28, part (North America).—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 38; ii, 1828, 436 (crit.).—RICHARDSON, Fauna Bor.-Am., ii, 1831, 99, in text.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, i, 1832, 139.—AUDUBON, Orn. Biog., ii, 1834, 403, pl. 171; v, 1839, 388.—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 341 (Florida).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 456 (Yucatan; habits).

*S[trix] flammea* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 354; Obs. Wilson's Am. Orn., 1826, [15].

[*Strix*] *flammea* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116, part.

*Ula flammea* JARDINE, ed. Wilson's Am. Orn., ii, 1832, 264.

*Strix pratincola* BONAPARTE, Geog. and Comp. List, 1838, 7 (based on Audubon, Orn. Biog., ii, 403, pl. 171).—DE KAY, Zool. N. Y., ii, 1844, 31, pl. 13, fig. 28.—HEERMANN, Journ. Ac. Nat. Sci. Phila., ii, 1853, 261 (California); Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 34 (California; habits).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 116; in Baird, Rep. Pac. R. R. Surv., ix, 1858, 47; Proc. Ac. Nat. Sci. Phila., 1862, 313 (San Francisco, California).—NEWBERRY, Rep. Pacific R. R. Surv., vi, chap. ii, 1857, 76 (San Francisco, San Diego, etc., California; Klamath Basin, Oregon).—BREWER, N. Am. Oology, i, 1857, 62, pl. 4, fig. 38.—BAIRD, Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 4 (Rio Frio and lower Rio Grande, Texas; Monterey, Nuevo Leon; nesting habits); Cat. N. Am. Birds, 1859, no. 47.—SCLATER, Proc. Zool. Soc. Lond., 1859, 390 (Oaxaca).—WHEATON, Ohio Agric. Rep., 1860, no. 20 (Ohio).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 49 (Ft. Whipple, Arizona, resident).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity New York City).—COOPER, Orn. Calif., 1870, 415.—GRAYSON, Proc. Bost. Soc. N. H., xiv, 1872, 270 (Tres Marias Is.).—ALLEN, Am. Nat., iii, 1870, 570 (Springfield, Massachusetts; Sachem's Head and Stratford, Connecticut), 646 (Lynn, Massachusetts).—SNOW, Birds Kansas, 1873, 2 (rare).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 163 (Llano de Chapulco and Forres de la Catedral, Puebla).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 365.—DUTCHER, Auk, iii, 1886, 439 (Flushing, Long Island, breeding).—CHAPMAN, Auk, iii, 1886, 485 (Englewood, New Jersey, 1 spec., Aug. 26).—RIDGWAY, Orn. Illinois, i, 1889, 400.—BREWSTER, Auk, vii, 1890, 205 (Westport, Massachusetts, Dec. 30,

- 1888); xviii, 1901, 136 (Worcester, Massachusetts, May 23, 1891); Bull. Mus. Comp. Zool., xli, 1902, 92 (Cape San Lucas district, Lower California).—PARK, Auk, vii, 1890, 400 (near Troy, New York, Nov. 19, 1889); viii, 1891, 114 (near Troy, New York, Dec. 3, 1890).—BERGTOLD, Auk, vii, 1890, 400 (Buffalo, New York, July 5, 1890).—JOHNSON, Auk, viii, 1891, 114 (Parkville, Long Island, Sept. 10, 1890).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 325, pl. 12, fig. 1 (egg); Auk, xii, 1895, 180 (Washington, D. C., breeding in winter!).—FISHER (A. K.), Hawks and Owls of U. S., 1893, 132, pl. 19; Science, iii, 1896, 625 (food).—SAGE, Auk, x, 1893, 207 (Leesville, Connecticut, June 11, 1891).—TYLER, Auk, xi, 1894, 253 (Lyndon, Vermont, June 4, 1894).—ANTHONY, Auk, xii, 1895, 138 (San Fernando, Lower California, breeding).—ULREY and WALLACE, Proc. Ind. Ac. Sci., 1895, 151 (North Manchester, Wabash Co., Indiana).—TUTTLE, Auk, xii, 1895, 191 (Erie Co., Ohio).—SAVAGE, Auk, xii, 1895, 393 (near Buffalo, New York, July 18, 1895).—COOKE, Birds Col., 1897, 77 (Denver, Colorado, 1 spec.); Bull. 44, Col. Agric. Exp. Sta., 1898, 160 (near Pueblo, Colorado, 3 specs.); Bull. 56, 1900, 205 (Wet Mountain Valley; Rocky Ford, June).—REED (J. H.), Auk, xiv, 1897, 374-383 (habits, etc., in e. Pennsylvania).—WORTHINGTON, Auk, xvi, 1899, 85 (Gardiners I., New York, Sept. 30, 1898; East Marion, Long Island, October 12, 1898).—PURDY, Auk, xvi, 1899, 77 (near Northville, Michigan, last of Oct., 1898).—BRAISLIN, Auk, xvii, 1900, 70 (Gardiners I., Long Island, March, 1899).—BAGG, Auk, xvii, 1900, 177 (near Utica, New York, Sept., 1898).—FLEMING, Auk, xvii, 1900, 177 (Toronto, Ontario, Sept. 7, 1899).—HOWE, Auk, xix, 1902, 79 (Long Point, Ontario, Nov., 1899).—WILLIAMS (R. W.), Auk, xix, 1902, 198 (nesting at Tallahassee, Florida, in Dec.).—BLAIN, Auk, xix, 1902, 210 (lower Detroit R. and Port Mouillee, Michigan).—HENNINGER, Auk, xx, 1903, 67 (Tiffin, Ohio, fall of 1901); Wilson Bull., no. 55, 1906, 52 (Seneca Co., Ohio, 4 records); n. s., xiv, 1907, 32 (Seneca Co., Ohio, six records).—BURTIS, Auk, xx, 1903, 212 (Islip, Long Island, Apr. 23, 1902).—SWALES, Auk, xxiii, 1906, 100 (Wayne Co., Michigan, Oct. 1895).—JONES, Wilson Bull., no. 57, 1906, 115 (Cleveland, Ohio, rare).—COLE, Bull. Mus. Comp. Zool., 1, 1906, 125 (Chichen Itza, Yucatan).—HUNN, Auk, xxiii, 1906, 420 (Silver City, New Mexico, 1 spec.).—HOLMES, Wilson Bull., no. 58, 1907, 23 (Summit, New Jersey, rare summer resident).—THAYER and BANGS, Condor, ix, 1907, 137 (Rosario and San Andres, Lower California).—THAYER, Auk, xxiv, 1907, 214 (Weston, Massachusetts, Nov. 14, 1906).—WAYNE, Auk, xxv, 1908, 21-25 (breeding season, etc., in South Carolina).—LINTON, Condor, x, 1898, 127 (Santa Cruz I., California, Nov.).—SMITH (H. G.), Auk, xxv, 1908, 185 (Denver, Colorado, Mar. 12, 1907; Holly, Prowers Co., Colorado, May 24, 1907).—LEIBELSPERGER, Auk, xxv, 1908, 232 (Berks Co., Pennsylvania, breeding).—ALLEN (G. M.), Auk, xxv, 1908, 234 (Dedham, Massachusetts, Aug. 17, 1907).—PEARSON, Auk, xxv, 1908, 316 (breeding season in South Carolina).—BALES, Wilson Bull., xxi, 1909, 33 (Pickaway Co., Ohio, breeding; list of specimens, with dates, etc.).—ISELY, Auk, xxix, 1912, 31 (Sedgwick Co., Kansas, breeding).
- [*Strix*] *pratincola* BONAPARTE, Consp. Av., i, 1850, 55.—GRAY, Hand-list, i, 1869, 52, no. 565.—RIDGWAY, Proc. U. S. Nat. Mus., ix, 1886, 164, in text (Chietla and Puebla, Puebla; crit.; measurements).—SHARPE, Hand-list, i, 1899, 300.
- [*Strix flammea*] var. *pratincola* RIDGWAY, Bull. Essex Inst., v, Dec., 1873, 200, in text.
- S[trix] flammea* . . . var. *pratincola* RIDGWAY, Ann. Lyc. N. Y., x, 1874, 378 (Illinois).
- Strix flammea*, var. *pratincola* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 13.—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 298 (Tres Marias Islands; Colima and Rio de la Armeria, Colima); Bull. U. S. Nat. Mus., no. 4, 1876, 38 (Tehuantepec City, Oaxaca).—JOUY, Field and Forest, ii, 1877, 173 (District of Columbia, breeding).—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 151 (Ft. Brown, Texas, resident).

- Strix flammea pratincola* RIDGWAY, Bull. Essex Inst., vi, Oct., 1874, 172 (Sacramento, California).
- Strix flammea*,  $\beta$  *pratincola* RIDGWAY, Orn. Fortieth Parallel, 1877, 569 (Sacramento, California).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 433 (Stockton, California).
- Aluco flammeus pratincola* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 7.—COUES, Check List, 2d ed., 1882, no. 461; Bull. Nutt. Orn. Club, viii, 1883, 122 (Hamilton, Ontario, May 9, 1882).
- A[luco] flammeus pratincola* COUES, Key N. Am. Birds, 2d ed., 1884, 502.
- A[luco] flammeus* . . . var. *pratincola* JORDAN, Man. Vertebr. E. U. S., 4th ed., 1884, 107.
- Aluco albus pratincola* ALLEN, Auk, xxv, July, 1908, 291, in text.
- Aluco pratincola* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 370; Check List, 3rd ed., 1910, 168.—VAN ROSSEM, Condor, xi, 1909, 208 (Los Coronados Islands, Lower California).—PENNOCK, Auk, xxvi, 1909, 305 (near Wilmington, Delaware, breeding).—BROOKS, Auk, xxvi, 1909, 313 (near mouth of Fraser R., Brit. Columbia, 1 spec., April).—COOKE, Auk, xxvi, 1909, 412 (several Colorado records).—HESS, Auk, xxvii, 1910, 23 (Philo, Champaign Co., Illinois, breeding).—BERGTOLD, Auk, xxvii, 1910, 207 (Burlington, Colorado, May 24, 1909).—CHAMBERLAIN (R.), Auk, xxviii, 1911, 112 (near Charleston, South Carolina, breeding in Sept.; descr. nest, etc.).—HOWELL (A. B.), Condor, xiv, 1912, 190 (Todos Santos Islands, Lower California, breeding).
- T[yto] alba pratincola* HARTERT, Vög. Paläarkt. Fauna, heft viii (bd. ii, 2), Aug., 1913, 1039.
- Strix americana* AUDUBON, Synopsis Birds N. Am., 1839, 25 ("Southern States, . . . Texas to North Carolina"); Birds Am., oct. ed., i, 1840, 127, pl. 34.—NUTTALL, Man. Orn. U. S. and Can., Land-Birds, ed. 2, 1840, 149.—BREWER, ed. Wilson's Am. Orn., 1840, 687.—COUES, Ibis, 1865, 162, in text (Fort Whipple, Arizona).
- Strix flammea americana* SCHLEGEL, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 4; no. 36 (Revue), 1873, 16.—COUES and SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 39 (Brownsville, Texas); v, 1879, 417 (Lomita Ranch, Texas, breeding).—BICKNELL, Bull. Nutt. Orn. Club, iii, 1878, 132 (New York City).
- [*Strix*] *flammea* var. *americana* COUES, Key N. Am. Birds, 1872, 202.
- Strix flammea* . . . var. *americana* COUES, Check List, 1873, no. 316.
- Strix flammea*, var. *americana* RATHBUN (F. R.), Revised List Birds Centr. N. Y., 1879, 26 (Pen Yan, New York, 1 spec.).—FISHER (A. K.), Bull. Nutt. Orn. Club, iv, 1879, 61 (Sing Sing, New York, 1 spec., Jan.).—WHEATON, Bull. Nutt. Orn. Club, iv, 1879, 62 (Columbus, Ohio, Nov. 2).
- [*Strix flammea* var. *americana*] d. *americana* COUES, Birds Northwest, 1874, 298 (synonymy).
- Aluco flammeus americanus* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 190; v, 1883, 533, footnote (San José del Cabo, Dec., Jan., and Caduano, Nov., Lower California).
- A[luco] flammeus americanus* RIDGWAY, Bull. Ill. State Labr. N. H., no. 4, 1881, 187 (Illinois).
- (?) *Strix forficata* AUDUBON, Orn. Biog., v, 1839, 334 ("Green Bay, on my way across the Mississippi").
- Strix perlata* (not of Lichtenstein) GAMBEL, Journ. Ac. Nat. Sci. Phila., i, 1847, 28 (California; crit.).—KAUP, Trans. Zool. Soc. Lond., iv, 1859, 247.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 2, part (Presidio de Mazatlan, Sinaloa; Tres Marias Is.; Rio de la Armeria, Colima; Aguas Calientes; 3622°—Bull. 50, pt 6—14—39



Agua Azul and Arozo Hondo, Guadalajara, Jalisco; Guanajuato; Valley of Mexico and Mexicalcingo, Mexico; Llano de Chapulco, Forres de la Catedral, and Chietla, Puebla; Orizaba, Vera Cruz; Cacoprieto and Tehuantepec City, Oaxaca; Tonalá, Chiapas; Izamal, Tizimin, and Calotmul, Yucatan; United States).

*Strix pratincola guatemalæ* (not *Strix pratincola* var. *guatemalæ* Ridgway) RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 520 (Rio Escondido, Nicaragua).

**TYTO PERLATA GUATEMALÆ<sup>a</sup> (Ridgway).**

**CENTRAL AMERICAN BARN OWL.**

Similar to *T. p. pratincola* but much darker, the tawny phase greatly predominating, having the upper parts much more uniformly mottled dusky grayish (there being little, if any, ochraceous or tawny admixture), the white specks more linear, the face more strongly tinged or suffused with dull purplish vinaceous (becoming black in front of eye), facial circle or rim deep orange-ochraceous above and black, or nearly so, below ears, the under parts entirely deep orange-ochraceous or ochraceous-tawny, with numerous small irregular spots of dusky, which, in part, often assume the form of zigzag transverse mottlings; light phase (relatively rare), white beneath but upper parts almost wholly mottled dusky grayish.

*Adult male*.—Length (skins), 345–370 (357); wing, 312–330 (319); tail, 134–145.5 (139.2); culmen (from cere), 21.5–22.5 (22); tarsus, 70.5–73.5 (72.3); middle toe, 35–39.5 (37).<sup>b</sup>

*Adult female*.—Length (skins), 365–385 (375); wing, 330–346 (338); tail, 140.5–144 (142.2); culmen (from cere), 21–23.5 (22.2); tarsus, 71.5–74 (72.7); middle toe, 35–40 (37.5).<sup>c</sup>

<sup>a</sup> The name *guatemalæ* was an inadvertence or possibly a lapsus, since no Guatemalan examples were in hand when the form was described and named, and none have been seen by me since that time. The Guatemalan Barn Owl is probably *T. p. pratincola*, at least that of the more eastern parts of the country is almost certainly so; but *T. p. guatemalæ* may occur on the Pacific side, since specimens of the latter from Salvador were examined by me at the time the form was described; indeed, the remarks concerning Guatemalan specimens in the Biologia Centrali-Americana (Aves, iii, 3) indicate that some, at least, Guatemalan specimens are referable to this form.

<sup>b</sup> Three specimens.

<sup>c</sup> Two specimens.

Locality.	Wing.	Tail.	Culmen, from cere.	Tarsus.	Middle toe.
<b>MALES.</b>					
One adult male from Nicaragua.....	330	145.5	22	70.5	39.5
Two adult males from Panama.....	313.5	136	22	73.2	35.7
One adult male from British Guiana (Berbice)= <i>T. p. stictica</i> ...	323	136.5	23.5	.....	.....
<b>FEMALES.</b>					
One adult female from Nicaragua.....	346	144	23.5	74	40
One adult female from Costa Rica.....	330	140.5	21	71.5	35
One adult female from Venezuela (Merida)= <i>T. p. stictica</i> .....	320	131.5	21	65.5	35
One adult female from Patagonia (Cordillera de Rio Chico)= <i>T. p. perlata?</i> .....	290	137.5	18.5	61.5	31.5

Central America, from Guatemala <sup>a</sup> (Dueñas; San Gerónimo) through Salvador (San Salvador), Honduras, Nicaragua (Jalapa; Savalá; Matagalpa; San Carlos; Chinandega), and Costa Rica (San José; Ochomogo), to Panamá (Veragua; Natá, Coclé; Loma del León).

*Strix perlata* (not of Lichtenstein) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (San Jose, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 367 (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 2, part (Dueñas and San Geronimo, Guatemala; <sup>a</sup> Salvador; San Carlos, and Chinandega, Nicaragua; San Jose, Costa Rica; Panama).

[*Strix*] *perlata* SHARPE, Hand-list, i, 1899, 300, part (Central America).

*Strix pratincola perlata* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 125, part (Nicaragua).

*Strix pratincola* (not of Bonaparte) SCLATER and SALVIN, Ibis, 1859, 222 (Guatemala).

[*Strix*] *flammea* (not of Linnæus) SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116, part.

*Strix flammea* (not of Linnæus) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 291, part (Veragua, Panama; "Mexico").

(?) *Strix flammea* BOUCARD, Liste Ois. récol. Guat., 1878, 22 (Guatemala).

*Strix flammea*, var. *guatemalæ* RIDGWAY, Bull. Essex Inst., v, Dec., 1873, 200 ("Panama to Guatemala"; type locality not given, but type from Chinandega, Nicaragua; coll. U. S. Nat. Mus.); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 11 (Chinandega, Nicaragua; Costa Rica; Salvador).

*Strix pratincola guatemalæ* ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 125 (San Jose, Costa Rica).—CHERRIE, Auk, ix, 1892, 327 (San Jose).

[*Strix flammea* var. *americana*] f. *guatemalæ* COUES, Birds Northwest, 1874, 299 (synonymy).

*Strix guatemalæ* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 302 ("Mexico"; Veragua, Panama).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 16 (Loma del Leon, Panama).

*Aluco pratincolus guatemalæ* ZELEDÓN, Proc. U. S. Nat. Mus., vii, 1885, 111 (Costa Rica).

*Aluco pratincola guatemalæ* CARRIKER, Ann. Carnegie Mus., vi, 1910, 479 (San Jose and Ochomogo, Costa Rica).

*T[yto] alba guatemalæ* HARTERT, Vög. Paläarkt. Fauna, heft viii (bd. ii, 2), Aug., 1913, 1039.

#### TYTO BARGEI (Hartert).

##### CURAÇAO BARN OWL.

Similar in coloration to *T. alba* (of Europe) but much smaller, with wings relatively shorter.

"Face white; a dark brown spot in front of the eye. Upper surface the same as in most of the European specimens. Beneath white, sparsely spotted with dark brown. Tail pale grayish isabelline, spotted with dark gray, and with four distinct blackish bars. Iris deep brown. Bill whitish flesh color, toes brown, claws deep brown.

<sup>a</sup> No Guatemalan examples of this form have been seen by me, the localities being cited from the Biologia Centrali-Americana (iii, p. 2).

Total length about 12 inches [about 305 mm.], wing 9.7 [246.4 mm.], tail 4.3 [109.2 mm.], tarsus 2.2 [55.9 mm.]."<sup>a</sup>

Island of Curaçao, Dutch West Indies.

*Strix flammea bargei* HARTERT, Bull. Brit. Orn. Club, no. iii, Dec., 1892, p. xiii (Curaçao, Dutch West Indies; coll. Tring Mus.); Ibis, 1893, 124 (reprint), 322 (crit.); Novit. Zool., ix, 1902, 304 (crit.).

*S[trix] flammea bargei* ROTHSCHILD and HARTERT, Novit. Zool., ix, 1902, 405, in text.

[*Strix*] *bargei* SHARPE, Hand-list, i, 1899, 301.

*Aluco pratincola bargei* CORY, Pub. 137, Field Mus. N. H., Oct. 25, 1909, 206 (Curaçao).

*T[yto] alba bargei* HARTERT, Vög. Paläark. Fauna, heft viii (bd. ii, 2), Aug., 1913, 1039.

### TYTO GLAUCOPS (Kaup).

#### HAITIAN BARN OWL.

Differing from all other American forms of the genus in the silvery gray face and absence of white specks on upper parts, and from all others except *T. punctatissima* in having transverse bars on lower parts.

*Adult male*.<sup>b</sup>—Face silvery gray, faintly tinged on anterior portion (especially lores and superciliary region) with pale vinaceous; a brownish black area in front of eye; facial circle bright cinnamon-rufous, the feathers along posterior margin of lower portion tipped with black; pileum and hindneck finely and densely vermiculated (transversely) with light brown and dusky, producing, viewed from a distance, a uniform dull dark grayish brown effect; back, scapulars, rump, and upper tail-coverts similar but the vermiculations coarser; wing-coverts and secondaries coarsely vermiculated and mottled with dusky and ochraceous-buff or light tawny, the latter predominating on some of the middle coverts, the secondaries with indications of several transverse bands of dusky grayish brown; outer webs of primaries ochraceous-buff or light tawny, mottled with dusky grayish brown, and with irregular, broken, quadrate spots of the latter; tail light tawny coarsely vermiculated and mottled with dusky and crossed by about five or six narrow bands of dusky; under parts ochraceous-buff, broken by irregular transverse bars of dusky; length (skin), 330; wing, 255; tail, 127; culmen (from cere), 21.5; tarsus, 60; middle toe, 33.<sup>c</sup>

Island of Haiti, Greater Antilles (Puerto Plata, Santo Domingo).

*Strix glaucops* KAUP, Jardine's Contr. Orn., 1852, 118 ("Jamaica," i. e. Haiti or Santo Domingo; coll. Brit. Mus.); Trans. Zool. Soc. Lond., iv, 1862, 246.—PELZELN, Journ. für Orn., 1872, 23 (crit.).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 302 (in list of specimens).—CORY, Birds Haiti and San Dom., 1885, 117;

<sup>a</sup> Not having seen a specimen of this form, I am obliged to quote the description given by Hartert in the Ibis, 1893, p. 322.

<sup>b</sup> The adult female not seen by me.

<sup>c</sup> One specimen.



Auk, iii, 1886, 465 (synonymy; descr.); Birds West Ind., 1889, 188; Cat. West Ind. Birds, 1892, 10, 100, 131.—GURNEY, Cat. Birds Prey, 1894, 43.—VERRILL (A. E. and A. H.), Proc. Ac. Nat. Sci. Phila., 1909, 359 (Santo Domingo).

[*Strix*] *glaucoops* GRAY, Hand-list, i, 1869, 52, no. 567.—CORY, List Birds West Ind., 1885, 21.—SHARPE, Hand-list, i, 1899, 301.

[*Aluco*] *flammeus glaucoops* RIDGWAY, Proc. U. S. Nat. Mus., iv, Nov. 25, 1881, 196. *T[yto] alba glaucoops* HARTERT, Vög. Paläarkt. Fauna, heft viii (bd. ii, 2), Aug., 1913, 1040.

*Strix dominicensis* (not of Gmelin) HARTLAUB, Naumannia, ii, 2 heft, 1852, 54 (Santo Domingo).—CORY, Bull. Nutt. Orn. Club, viii, April, 1883, 95 (Santo Domingo; coll. C. B. Cory).—REICHENOW and SCHALOW, Journ. für Orn., 1885, 458 (reprint of Cory's orig. descr.).

*Strix flammea* (not of Linnæus) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 291, 302, part (Santo Domingo).

### TYTO INSULARIS INSULARIS (Pelzeln).

#### ST. VINCENT BARN OWL.

Small, like *T. glaucoops*, but with face vinaceous-brown (more or less deep) instead of silvery gray, under parts spotted instead of barred, upper parts more or less conspicuously dotted with white, and general tone of coloration of upper parts much darker and less uniform.

*Adults (sexes alike).*—Face vinaceous-brown or cameo brown (more or less deep), with an area of brownish black in front of eye; facial rim or border bright rufous-brown or hazel, spotted, in part at least, with brownish black, the feathers of lower portion (from ears downward) with larger terminal or subterminal spots of the same; general color of upper parts dusky, minutely vermiculated and freckled with light gray, but the dusky usually greatly predominating, each feather of back, scapulars, rump, upper tail-coverts, lesser wing-coverts, primary coverts, and alulæ usually with a small subterminal spot of white, the hindneck, sides of neck, and pileum with minute spots or streaks of the same; intermixed with the general dusky color is a greater or less amount of tawny-ochraceous, this chiefly on outer webs and hidden portion of scapulars, middle wing-coverts, and basal portion of greater wing-coverts; anterior border of wing (broadly) mostly tawny or deep tawny-ochraceous, spotted with blackish; primaries sooty black or dusky with large, more or less heavily mottled, spots of light tawny; tail dark sooty brown or dusky, more or less distinctly banded with light tawny or tawny-ochraceous, the bands of the latter much broken (sometimes rendered nearly obsolete) by dusky mottling; under parts cinnamon-buff (sometimes deeper or more ochraceous posteriorly), with numerous irregular (mostly triangular or sagittate) spots of dusky, these sometimes inclosing a smaller spot of whitish; bill dull yellow or yellowish white (in dried skins); iris dark brown; toes and lower part of tarsi dusky grayish brown (in dried skins).

*Adult male*.—Length (skins), 272–307 (287); wing, 226–236 (230.5); tail, 102.5–106 (104.2); culmen (from cere), 18–19 (18.5); tarsus, 48–53.5 (50.5); middle toe, 28.5–30 (29.2).<sup>a</sup>

*Adult female*.—Length (skins), 260–315 (283); wing, 241–243 (242); tail, 100.5–108 (105.5); culmen (from cere), 18–19 (18.5); tarsus, 50–55.5 (53.3); middle toe, 28.5–30.5 (29.7).<sup>b</sup>

Islands of St. Vincent (Kingston), Grenada (St. Georges), Carriacou, Unión, and Bequia, Lesser Antilles.

*Strix insularis* PELZELN, Journ. für Orn., xx, Jan., 1872, 23 (St. Vincent, Lesser Antilles;<sup>c</sup> coll. Vienna Mus.).

*T[yto] a[lba] insularis* HARTERT, Bull. Brit. Orn. Club, xxxi, Jan. 25, 1913, 38, in text.

*T[yto] alba insularis* HARTERT, Vög. Paläarkt. Fauna, heft viii (bd. ii, 2), 1913, 1040.

*Strix flammea* var. *nigrescens* (not of Lawrence tom. cit. p. 64) LAWRENCE, Proc. U. S. Nat. Mus., i, 1879, 194 (St. Vincent), 273 (Grenada; habits), 487, part (St. Vincent; Grenada).—WELLS, Proc. U. S. Nat. Mus., ix, 1887, 621 (Grenada; habits; descr. eggs).

<sup>a</sup> Four specimens from Grenada.

<sup>b</sup> Three specimens.

Locality.	Wing.	Tail.	Culmen from cere.	Tarsus.	Middle toe.
MALES.					
Four adult males from Grenada.....	230.5	104.2	18.5	50.5	29.2
FEMALES.					
One adult female from Grenada.....	241	108	18	50.5	30
One adult female from Bequia.....	243	108	18.5	54	28.5
One adult female from St. Vincent.....	242	100.5	19	55.5	30.5
SEX NOT DETERMINED.					
One adult from St. Vincent.....	235	98	19	53.5	30
Two adults from Grenada.....	236.5	101.5	19.5	51.5	30.2

With a wholly insufficient amount of material, I am unable to determine whether the birds from St. Vincent on the one hand and those from Grenada and the Grenadines on the other are really the same or not; but I strongly suspect that they may be different. The only two specimens from St. Vincent are very unlike, one (that of undetermined sex) being a very dark bird with very conspicuous white spotting on the upper parts, and conspicuously different from any other in the entire series, while the other is much lighter in color of upper parts, which are almost wholly devoid of any white markings; indeed the latter is so much like the birds from Dominica that I am unable to distinguish it satisfactorily, and possibly it may be in reality a bird from Dominica wrongly labeled. If the two birds said to be from St. Vincent are both really from that island, I doubt whether two forms can be made out. However, a very much larger number of specimens is required to settle the question.

<sup>c</sup> Supposed by Pelzeln to be St. Vincent in the Cape Verde group, Africa, but shown by Hartert to be the West Indian island of that name.

- [*Strix*] *flammea nigrescens* CORY, List Birds West Ind., 1885, 21, part (St. Vincent).  
*Strix flammea nigrescens* CORY, Auk, iii, 1886, 464, part (St. Vincent); Birds West Ind., 1889, 187, part (St. Vincent).  
*Strix nigrescens* CORY, Cat. West Ind. Birds, 1892, 10, 100, part (St. Vincent; Grenada).—CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 272 (St. Vincent, Bequia, Union I., Carriacou, and Grenada, Lesser Antilles; habits; descr. nest and eggs).  
*Aluco flammea nigrescens* ROTHSCILD, Bull. Brit. Orn. Club, xiv, June 25, 1904, 89, 90 (St. Vincent).  
*Hybris nigrescens noctividus* BARBOUR, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 57 (St. Georges, Grenada; coll. Mus. Comp. Zool.).  
 (?) *Strix flammea* (not of Linnaeus) FEILDEN, Ibis, 1889, 488 (Barbados).

### TYTO INSULARIS NIGRESCENS (Lawrence).

#### DOMINICA BARN OWL.

Similar to *T. i. insularis*, but upper parts usually with white dots obsolete or very minute, never so well developed, the general surface more uniformly dusky on account of more minute vermiculations; under parts less heavily spotted, the spots, as a rule, less numerous.

*Adult male*.—Length (skins), 285–333 (309); wing, 230.5–235 (232.7); tail, 103.5–104 (103.7); culmen, from cere (19.5); tarsus, 50; middle toe, 29–30.5 (29.7).<sup>a</sup>

*Adult female*.—Length (skins), 300–335 (317.5); wing, 240–247 (243.5); tail, 110.5–113.5 (112); culmen, from cere, 18.5–20 (19.2); tarsus, 52–53 (52.5); middle toe, 29.5–31 (30.2).<sup>a</sup>

Island of Dominica (Roseau), Lesser Antilles; island of Santa Lucia?

*Strix flammea* var. *nigrescens* LAWRENCE, Proc. U. S. Nat. Mus., i, July 30, 1878, 64 (Dominica, Lesser Antilles; coll. U. S. Nat. Mus.); i, 1879, 487, part (Dominica); iii, 1880, 257 (Dominica; habits).

[*Strix*] *flammea nigrescens* CORY, List Birds West Ind., 1885, 21, part (Dominica).

*Strix flammea nigrescens* CORY, Auk, iii, 1886, 464, part (Dominica; synonymy; reprint of original descr.); Birds West Ind., 1889, 187, part (Dominica).—VERRILL (G. E.), Trans. Conn. Ac. Sci., viii, 1892, 326 (Dominica).

*Strix nigrescens* CORY, Cat. West Ind. Birds, 1892, 10, 100, part (Dominica).—GURNEY, Cat. Birds of Prey, 1894, 43, part (Dominica).

[*Strix*] *nigrescens* SHARPE, Hand-list, i, 1899, 301 (Dominica).

*Aluco nigrescens* BARBOUR, Proc. Biol. Soc. Wash., xxiv, Feb. 24, 1911, 57, in text (Dominica).

*T[yto] a[iba] nigrescens* HARTERT, Bull. Brit. Orn. Club, xxxi, Jan. 25, 1913, 38, in text (Dominica).

*T[yto] alba nigrescens* HARTERT, Vög. Paläarkt. Fauna, heft viii (bd. ii, 2), 1913, 1040.

<sup>a</sup> Two specimens, from Dominica. Two specimens, of unknown sex, doubtfully supposed to have been obtained on Santa Lucia, measure as follows: Wings 231–240 (235.5); tail, 98–103.5 (101.7); culmen, from cere, 17.5–19 (18.2); tarsus, 51.5–53.5 (52.5); middle toe, 29.5–30 (29.7). Owing to the uncertainty as to the amount of individual variation in this supposed form, it is impossible to tell, without a much larger number of specimens, whether examples from Dominica and Santa Lucia are different from one another or not.



## TYTO PUNCTATISSIMA (Gray).

## GALÁPAGOS BARN OWL.

Apparently <sup>a</sup> most nearly resembling *T. insularis* but still more deeply colored and with under parts irregularly barred, instead of spotted, with dusky.

"*Adult* (type).—Above dull brown, with a few scattered spots of dusky white, and minute flecks of the same on the dorsal feathers; sides of neck light golden buff, indistinctly marked with transverse lines of brown, becoming gradually obscure and disappearing on the hind neck; the wing-coverts more or less washed externally with deep golden buff, many of the white spots also tinged with the same color, the buff predominating along the edge of the wing and at the base of the primary-coverts; quills dull brown like the back, slightly varied with minute flecks of white, and vermiculated with golden buff on the outer webs, much more distinct on the primaries, where it forms four irregularly defined bands; the secondaries with a distinct white terminal spot; the inner lining of wing ashy brown, the base of the feathers buffy white, the inner webs with two or three indistinct bands of whitish; tail golden buff, barred across with four bands of dark brown, the interspaces vermiculated with the same color, especially toward the tips of the feathers, which are there almost entirely brown, with a white terminal spot; general color of face vinous rufous, inclining to black round the eye; the cheeks silvery white, washed with rufous; facial ruff rich golden buff, white at base of feathers, which are coarsely vermiculated with brown, sometimes in a horseshoe pattern; crown of head deep golden buff, vermiculated with brownish; under surface of body rich golden buff, transversely vermiculated with brownish bars, irregular in shape and more distinct on the abdomen, the under wing- and tail-coverts colored like the breast, but the latter rather paler; bill yellowish, horn-colored at base; feet blackish. Total length 13 inches [330.2 mm.], culmen 1.7 [4.32 mm.], wing 9.2 [233.7 mm.], tail 4.6 [116.8 mm.], tarsus 2.3 [58.4 mm.]." <sup>b</sup>

<sup>a</sup> I have not been able to examine a specimen of this form.

<sup>b</sup> Sharpe's description in Cat. Birds Brit. Mus., ii, 1875, 297, 298.

The following measurements (converted from inches and tenths in the originals to millimeters) are given, respectively, by Gray, Sharpe, and Salvin; it should be remarked that the first two are from the same specimen, the last probably being from one of the specimens collected later by Dr. Habel:

	Wing.	Tail.	Culman (probably including cere).	Tarsus.	Middle toe.	Total length.
Gray, in Gould's Zool. Voy. "Beagle," from type specimen.....	234.9	107.9	.....	68.6	27.9	342.9
Sharpe, Cat. Birds Brit. Mus., ii, from type specimen..	233.7	116.8	43.2	54.8	.....	330.2
Salvin, Trans. Zool. Soc. Lond., ix, 494 (from Habel specimen?).....	228.6	104.1	.....	61	.....	304.8

Galápagos Archipelago (James, Indefatigable, Abingdon, Albemarle, and South Seymour islands; Chatham Island?).

*Strix punctatissima* GRAY, in Gould, Zool. Voy. "Beagle," iii, 1841, 34, pl. 4 (James Island, Galapagos Archipelago; coll. Brit. Mus.).—BONAPARTE, Consp. Av., i, 1850, 55.—KAUP, Jardine's Contr. Orn., 1852, 118; Trans. Zool. Soc. Lond., iv, 1859, 246.—HARTLAUB, Journ. für Orn., 1854, 170.—STRICKLAND, Orn. Syn., i, 1855, 182.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 323 (Indefatigable I., Galapagos).—SALVIN, Trans. Zool. Soc. Lond., ix, 1876, 494 (James, Indefatigable, and Abingdon islands).—RIDGWAY, Proc. U. S. Nat. Mus., xii, 1889, 120, 122, 123, 124 (James, Indefatigable, and Abingdon islands); xix, 1896, 583 (James, Indefatigable, and Abingdon islands; synonymy; reprint of orig. descr.).—ROTHSCHILD and HARTERT, Novit. Zool., vi, 1899, 175 (Chatham I.?; crit.); ix, 1902, 405 (Albemarle Island; crit.), 417 (Albemarle, Indefatigable, James, and Abingdon islands).—SNODGRASS and HELLER, Proc. Wash. Ac. Sci., v, 1904, 266 (James Indefatigable, South Seymour, Abingdon, and Albemarle islands; crit.; descr. eggs).

[*Strix*] *punctatissima* GRAY, Hand-list, i, 1869, 52, no. 566.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116.—SHARPE, Hand-list, i, 1899, 301.

S[*trix*] *punctatissima* GRAY, Gen. Birds, i, 1844, 41.—ROTHSCHILD and HARTERT, Novit. Zool., vi, 1899, 202 (Galapagos).

*Strix flammea* (not of Linnæus) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 291, part (Galapagos).

[*Strix flammea*] ? *punctatissima* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 297 (in list of specimens).

*Aluco punctatissima* RIDGWAY, Proc. U. S. Nat. Mus., iv, Nov. 25, 1881, 196.

*Aluco flammea punctatissima* ROTHSCCHILD, Bull. Brit. Orn. Club, xiv, June 25, 1904, 89.

T[*yto*] *alba punctatissima* HARTERT, Vög. Paläarkt. Fauna, heft viii (bd. ii, 2), Aug., 1913, 1040.

## Family BUBONIDÆ.

### THE EARED OWLS.

=*Bubonidæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. vii, 116.—SHARPE, Cat. Birds Brit. Mus., ii, 1874, 1; Rev. Classif. Birds, 1891, 79; Hand-list, i, 1899, 280.

=*Bubonidæ* GADOW, Bronn's Thier-Reich, Vög., ii, 1891, 236, 301.

=*Asionidæ* SCLATER, Ibis, 1880, 403.

=*Strigidæ* COUES, Key N. Am. Birds, 2d ed., 1884, 502.

=*Striginæ* NEWTON, Dict. Birds, 1894, 674, in text.

Striges with inner (second) toe much shorter than middle (third) toe, the claw of the latter not pectinated or serrate on edge; feathers of the planta tarsi (if present) not reversed or recurved, but pointed downward like those of acrotarsium; outermost developed primary (tenth) shorter than eighth, and at least one (sometimes six) primaries with inner webs emarginated or sinuated; tail usually more or less rounded, rarely truncate (never emarginate); face more or less circular, or at least not pointed below, where not conspicuously prominent.

Sternum with a manubrium, the metasternum 4-notched, the sternal crest narrow; clavicles not united, the furcula free from the

keel of the sternum; tarso-metatarsus with bony ring or arch to confine the exterior tendon of the toes; third (middle) toe with its second and basal phalanges subequal; skull relatively broad and short; palatines curved, much wider posteriorly than anteriorly, the maxillo-palatines very broad; prefrontal process of ethmoid consisting of a thin plate; interorbital region thin and often perforated.<sup>a</sup>

In addition to the external characters mentioned above, the head is frequently surmounted by a pair of more or less distinct, often very conspicuous, ear- or horn-like tufts of feathers, and the eyes are, as a rule, large and prominent; but there are numerous genera in which these features are not present.

As in the Tytonidæ the Bubonidæ have the plumage remarkably full, soft and downy and in coloration more or less "protective," that is to say, characterized by elaborate vermiculation, mottling, etc., though in some the pattern is more bold or simple. The sexes are invariably colored essentially alike. Frequently, as in the case of some Caprimulgi, the plumage is dichromatic, different individuals of the same species, wholly independent of sex or age, differing remarkably in coloration, the extreme phases being represented by birds of a gray or brownish gray color on the one hand and others of a more or less bright cinnamon-rufous or "brick-red" hue, individuals of intermediate coloration being usually much less numerous than those representing the extremes. These distinct phases are constant from the first plumage to old age, and are frequently to be found in one brood of young.

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<sup>a</sup> The genus *Phodilus* (often referred to the Tytonidæ, but now considered an aberrant member of the Bubonidæ) presents certain exceptions to the osteological characters given above; and although the discrepancies in question tend toward the characters of the Family Tytonidæ they are not, according to Mr. Frank Beddard (Ibis, 1890, 298), sufficiently numerous or important to lead to the conclusion that *Phodilus* occupies a really intermediate position between the two families, or to indicate "the creation of a separate subfamily for its reception, or the amalgamation of the two generally recognized families into one," though it would seem that this conclusion may require reconsideration.

The characters in which *Phodilus* agrees with *Tyto* are the following:

- (1) Absence of extensions over the occipital region of the fossæ.
- (2) Comparatively narrow maxillo-palatines.
- (3) Approximately equal width throughout of the palatines.
- (4) Slightly swollen prefrontal process of the ethmoid.
- (5) Comparative thickness of the interorbital septum.
- (6) Absence of bony ring or loop to metatarsus (according to Newton, Dictionary of Birds, p. 673).
- (7) Absence of manubrial process of sternum (according to Newton).

Points of agreement with Bubonidæ (Genus *Strix*) are:

- (1) General configuration and proportion between length and breadth of skull.
- (2) Prominent forehead.
- (3) Absence of occipital convexities.
- (4) Clavicles not united to form a furcula (according to Newton).



The Bubonidæ are more nearly cosmopolitan than the Tytonidæ, being absent only from Polynesia, representatives of the family existing in Madagascar, New Zealand, the Hawaiian islands,<sup>a</sup> and the Arctic districts. Thirty recent genera and nearly three hundred species and subspecies are recognized, of which eighteen genera and about one hundred species (including subspecies) are American.

Owing to the circumstance that the most important structural characters are not evident in dried skins, a satisfactory arrangement of the genera is hardly possible at this time. If all the genera had been as carefully examined from freshly killed specimens as have those of northern Europe, by Dr. Collett, the matter would be greatly simplified, since the form, size, etc., of the external ear-opening affords an excellent character, though a classification based on this alone would probably be far from perfect. Nitzsch, Pycraft, Hubert Lyman Clark, and others have studied the osteology and pterylography of a limited number of forms, and so far as their investigations have extended much has been learned; but unfortunately a very large proportion of the genera have not been available for study from freshly killed or alcoholic specimens, and hence any arrangement possible at the present time must be considered provisional only.

KEY TO THE AMERICAN GENERA OF BUBONIDÆ.

- a. External ear-opening extremely large, its vertical axis equal to at least half the greatest height of skull, crossed by a median ligament or bridge, its margin (at least the anterior one) produced into a dermal flap of greater or less width.
- b. Head without distinct, if any, ear-like feather tufts; ear-orifice either in lower part of the external ear-opening, below the transverse "bridge" or (left ear of *Cryptoglaux*) on both sides of the latter.
- c. Cranium conspicuously asymmetrical, abnormal on both sides; external ear-openings broadly oval, of equal size, slightly asymmetrical, the marginal flap nearly equally developed all round, relatively narrow in front; seventh and eighth *b* primaries longest; two outer primaries with inner webs emarginated; tail less than two-thirds as long as wing, nearly or quite truncate; size small (wing 133-188 mm.).
- d. Toes feathered (except in *C. ridgwayi*); ear-tufts very minute or obsolete..... *Cryptoglaux* (p. 622).
- dd. Toes wholly naked; ear-tufts distinct though very small.  
*Gisella* (extralimital).<sup>c</sup>

<sup>a</sup> The single Hawaiian species is, however, one of nearly world-wide range (*Asio accipitrinus*).

<sup>b</sup> Third and fourth from outside, not counting the rudimentary and concealed eleventh primary.

<sup>c</sup> *Gisella* Bonaparte, Ann. Sci. Nat. (Zool.), 4 ser., 1, 1854, 112 (nomen nudum) Rev. et Mag. de Zool., vi (2), 1854, 541. (Type, *Strix lathamii* Bonaparte = *Nyctale harrisi* Cassin).—*Nyctalatinus* "Kaup, 1854" Gray, Cat. Gen. and Subgen. Birds, 1855, 135. (Type, *N. albipunctatus* Kaup = *Nyctale harrisi* Cassin).—*Nyctalatinus* (emendation) Selater and Salvin, Nom. Av. Neotr., 1873, 116.

Colombia to southern Brazil; two species. (It is possible that "*Cryptoglaux*" *ridgwayi*, of which only the young is known, may belong to this genus. If so, the two groups are hardly generically distinct.)

- cc. Cranium not distinctly, if at all, asymmetrical (if asymmetrical abnormal on right side only); external ear-openings reniform, of unequal size, conspicuously asymmetrical, largest on right side; dermal flap greatly developed on anterior side, also largest on right side; sixth to eighth *a* primaries longest; from four to five outer primaries with inner webs emarginated; tail more than two-thirds as long as wing, strongly rounded; size large (wing 300-460 mm.).
- d. Cranium slightly asymmetrical; vertical axis of right and left external ear-openings equal and greater than longitudinal axis of eye; interramal pteryla fused with mandibular pteryla from gape backward; eyes relatively small; face relatively very broad and flat; feet relatively small, with feathering of toes very long, partially concealing claws.
- e. Squamosal strongly asymmetrical; tenth (apparent outermost) primary longer than third; *b* four outer primaries with inner web emarginated.  
**Scotiaptex** (p. 634).
- ee. Squamosal very slightly asymmetrical; tenth (apparent outermost) primary equal to first; *c* five outer primaries with inner web emarginated.  
**Ulula** (extralimital). *d*
- dd. Cranium symmetrical; vertical axis of external ear-opening greater on left side than on right, and less than horizontal axis of eye, that on right side greater than the latter; interramal pteryla tapering gently backward; eyes relatively large; face relatively less broad and flattened; feet relatively larger, with feathering of toes short, not reaching to base of claws (sometimes confined to basal outer part of middle toe only). **Strix** (p. 639).
- bb. Head with more or less conspicuous ear-like feather tufts; ear-orifice in middle or upper portion of external ear-opening, above the transverse ligamentous "bridge" or else between two transverse ligaments. *e* (External ear-openings extremely large and conspicuously asymmetrical, but cranium symmetrical).
- c. Tail not more than half as long as wing, the latter more than seven times as long as tarsus. .... **Asio** (p. 652).
- cc. Tail more than half as long as wing, the latter less than six times as long as tarsus.
- d. Nostril small, circular; bill and feet relatively large and stout, the toes densely feathered; two outer primaries with inner webs emarginated; larger (wing 278-305 mm.). .... **Rhinoptynx** (p. 670).
- dd. Nostril larger, oval, obliquely horizontal; *a* bill and feet relatively small and weak, *f* the toes completely naked; three outer primaries with inner webs emarginated. .... **Pseudoscops** (p. 674).
- aa. External ear-opening relatively small, its vertical axis much less than half the greatest height of skull, not crossed by a ligamentous "bridge," nor with margin developed into a dermal flap.

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*a* Counting from innermost primary; second to fourth from outside.

*b* Eighth from outside.

*c* Tenth from outside.

*d* *Ulula* Cuvier, Règne Anim., i, 1817, 329. (Type, *Strix uralensis* Pallas.)—*Ptynx* Blyth, in Cuvier's Animal Kingdom, 1840, 175, footnote. (Type, *Strix uralensis* Pallas.) (Palæarctic Region; monotypic?)

*e* The details of structure of the external ear-openings, which can not be exactly determined from dried skins, are assumed to be the same in *Rhinoptynx* and *Pseudoscops* as in *Asio*.

*f* In these characters agreeing with *Asio*, which sometimes also has the toes naked.

- b. Nostril a large oval or roundish opening at anterior end of cere, the latter not inflated, except (sometimes) laterally; pteryla of pileum arranged in longitudinal rows.<sup>a</sup>
- c. Tail much less than two-thirds as long as wing, truncate or slightly rounded; tarsus much more than one-ninth as long as wing; length of cere on top more than half as long as chord of culmen.
- d. Longer under tail-coverts, falling far short of tip of tail; bill mostly exposed, claws wholly so; color not white.
- e. Smaller (wing not more than 200 mm., usually much less); cere inflated laterally.
- f. Without ear-tufts; tarsus with much more than lower half naked (sometimes wholly so).....**Gymnasio** (p. 676).
- ff. With ear-tufts; tarsus with not more than lower half naked, usually feathered to base of toes (even the toes sometimes feathered or bristled)  
**Otus** (p. 681).
- ee. Larger (wing 230-475 mm.); cere not inflated laterally.
- f. With conspicuous ear-tufts.
- g. Fifth, sixth, and seventh,<sup>b</sup> primaries longest, the tenth (apparent outermost) not longer than secondaries; ear-tufts composed of relatively longer and narrower feathers; toes entirely naked; bill and feet relatively much weaker; size smaller (wing about 300 mm.).  
**Lophostrix** (p. 732).
- gg. Seventh, eighth, and ninth <sup>c</sup> primaries longest, the tenth much longer than secondaries; ear-tufts composed of relatively shorter and broader feathers; toes feathered (except terminal phalanges); bill and feet relatively much stouter; size larger (wing 350-475 mm.).  
**Bubo** (p. 736).
- ff. Without ear-tufts.
- g. Toes feathered (except terminal phalanges); bill and feet relatively much stouter, the former less compressed.....**Pulsatrix** (p. 754).
- gg. Toes completely naked; bill and feet relatively much weaker, the former more compressed.....**Ciccaba** (p. 759).
- dd. Longer under tail-coverts reaching nearly if not quite to tip of tail; bill and claws mostly hidden by long bristle or hair-like feathers; color white (more or less barred or transversely spotted with slate color). (Size of *Bubo*).....**Nyctea** (p. 767).
- cc. Tail much more than two-thirds as long as wing, graduated; tarsus less than one-ninth as long as wing (shorter than middle toe, with claw); length of cere on top less than half as long as chord of culmen.....**Surnia** (p. 772).
- bb. Nostril a small circular opening near middle of the inflated (semibulbous) cere; pteryla of pileum uniformly and thickly feathered.
- c. Seventh and eighth, or sixth, seventh, and eighth,<sup>d</sup> primaries longest, the tenth (apparent outermost) shorter than second <sup>e</sup> (sometimes shorter than first);<sup>f</sup> tarsus slightly if at all longer than middle toe with claw; outer toe only slightly shorter than inner toe; smaller (wing less than 120 mm.).

<sup>a</sup> This last character assumed as to *Lophostrix*, *Bubo*, *Pulsatrix*, *Ciccaba*, *Nyctea*, and *Surnia*.

<sup>b</sup> Fourth, fifth, and sixth from outside.

<sup>c</sup> Second, third, and fourth from outside.

<sup>d</sup> Third and fourth, or third, fourth, and fifth from outside.

<sup>e</sup> Ninth from outside.

<sup>f</sup> Tenth from outside.



- d. Rectrices 12; tarsus not longer than middle toe with claw (sometimes much shorter), densely feathered; tenth (apparent outermost) primary shorter than first; tail more than half as long as wing. . . . . *Glaucidium* (p. 779).  
 dd. Rectrices 10; tarsus longer than middle toe with claw, scantily haired or bristled; tenth (apparent outermost) primary equal to or longer than first; tail less than half as long as wing. . . . . *Micropallas* (p. 806).  
 cc. Eighth and ninth<sup>a</sup> primaries longest, the tenth (apparent outermost) longer than sixth;<sup>b</sup> tarsus more than twice as long as middle toe without claw; outer toe much shorter than inner toe, larger (wing more than 150 mm.).  
*Speotyto* (p. 812).

### Genus *CRYPTOGLAUX* Richmond.

- Nyctala* (not *Nyctalus* Bowditch, 1825) BREHM, Isis, bd. xxi, heft xii, 1828, 1271 (Type, as fixed by Gray, 1855, *Strix tengmalmi* Gmelin.)  
*Nyctale* <sup>c</sup> (emendation) BREHM, Handb. Naturg. Vög. Deutschl., 1831, 111.  
*Aegolius* (not *Aegolia* Billberg, 1820) KAUP, Skizz. Entw.-Gesch. Naturl. Syst. Eur. Thierw., th. 1, 1829, 34. (Type, by original designation, *Strix tengmalmi* Gmelin.)  
*Scotophilus* (not *Scotophila* Hübner, 1816, nor of Leach, 1822) SWAINSON, Classif. Birds, ii, 1837, 217. (Type, *Strix tengmalmi* Gmelin.)  
 (?) *Glaux* MORRIS, in N. Wood's Naturalist, ii, no. 9, 1837, 123. (Types, *G. tengmalmi* Morris [= *Strix tengmalmi* Gmelin?] and *G. nudipes* Morris [= ?]).  
*Cryptoglaur* <sup>d</sup> RICHMOND, Auk, xviii, April, 1901, 193. (Type, *Strix tengmalmi* Gmelin.)  
*Microscops* BUTURLIN, Nacha Okhota, St. Petersb., Nov., 1910, 13. (Type, *Strix acadica* Gmelin.)

Small Bubonidae (wing about 130–188 mm.) with minute or rudimentary ear-tufts,<sup>e</sup> relatively very large head, very broad and flat face, small eyes, excessively large and conspicuously asymmetrical external ear-openings (the asymmetry involving even the skull itself), and (except in *C. ridgwayi*) feathered toes.

Bill relatively small and weak; cere on top much shorter than chord of culmen, nearly straight, slightly ascending basally. Nostril rather small, oval or broadly elliptical, vertical, or obliquely vertical, in anterior edge of cere. External ear-opening excessively large, involving nearly the whole of the postocular portion of the head, broadly oval, margined all round with a narrow dermal flap (widest anteriorly), those of opposite sides conspicuously asymmetrical, the ear-orifice on left side entirely below the median transverse ligamentous bridge, that on right side mostly above the bridge. Wing relatively large, with longest primaries exceeding distal secondaries

<sup>a</sup> Second and third from outside.

<sup>b</sup> Fifth from outside.

<sup>c</sup> "Von *νυκταλος*, ein Freund der Nacht." (Brehm.)

<sup>d</sup> *κρυπτος*, hidden, and *γλαύξ*, an owl. (Richmond.)

<sup>e</sup> At first sight there are apparently no ear-tufts, but a close examination will reveal distinct though very minute indications of them. In the very closely related (and possibly not really distinct) South American genus *Gisella* (see p. 619) the ear-tufts are still more obvious.

by a little less than one-third the total length of wing; seventh and eighth, or seventh, eighth, and ninth,<sup>a</sup> primaries longest, the tenth (apparent outermost) shorter than fourth<sup>b</sup> (sometimes equal to second<sup>c</sup>); two outer primaries with inner webs emarginated or sinuated (near tip). Tail less than two-thirds as long as wing, truncate or very slightly rounded. Tarsus about as long as middle toe without claw, densely clothed (all round) with long, soft feathers, the toes similarly feathered, except on terminal phalanges and under side (wholly naked in *C. ridgwayi*, which, however, may possibly belong to the genus *Gisella*).<sup>d</sup>

*Coloration*.—Adults brown above more or less spotted with white; beneath white broadly striped with brown or russet. Young essentially like adults above, but under parts plain brown anteriorly, ochraceous posteriorly, the face plain dusky strongly contrasted with white superciliary marks.

*Range*.—Colder parts of Northern Hemisphere. (Three species; one of circumpolar range, two peculiar to North America, where ranging southward to high mountains of Costa Rica.)

KEY TO THE SPECIES AND SUBSPECIES OF CRYPTOGLAUX.

- a. Larger (wing 165 mm. or more, tail 101.5 mm. or more); adults with pileum spotted with white, young with under parts mostly plain sooty brown. (*Cryptoglaux tengmalmi*.)
- b. Paler and smaller (wing 165 in male, 168.5 in female); legs whitish, usually immaculate; under tail-coverts narrowly streaked with brown. (Northern Europe and Asia.) . . . . . *Cryptoglaux tengmalmi tengmalmi* (extralimital).<sup>e</sup>

<sup>a</sup> Third and fourth, or second, third, and fourth, from outside, not counting the rudimentary eleventh.

<sup>b</sup> Eighth from outside.

<sup>c</sup> Ninth from outside.

<sup>d</sup> See page 619.

<sup>e</sup> (?) [*Strix*] *funerea* Linnæus, Syst. Nat., ed. 10, i, 1758, 93, part (based on Fauna Suecica, 51); ed. 12, i, 1766, 133.—*Nyctale funerea* Bonaparte, Cat. Met. Ucc. Eur., 1842, 24.—*Ulula funerea* Schlegel, Mus. Pays-Bas, Striges, 1862, 8.—*Syrnium funereum* Heuglin, Orn. Nord-Ost Africa, i, 1869, 123.—*Cryptoglaux funerea funerea* American Ornithologists' Union, Check List, 3rd ed., 1910, 171.—[*Strix*] *tengmalmi* Gmelin, Syst. Nat., i, pt. 1, 1788, 291 (Sweden; based on Tengmalm, Act. Stockh. Ann. 1783, trim. 1).—*Strix tengmalmi* Naumann, Vög. Deutschl., i, 1822, 500, pl. 48, figs. 2, 3.—*Noctua tengmalmi* Cuvier, Règne Anim., ed. 2, 1829, 345; Gould, Birds Europe, i, pt. 18, Sept. 1, 1836, pl. 49.—*Nyctala tengmalmi* Bonaparte, Geog. and Comp. List, 1838, 7, part; Gray, Gen. Birds, i, 1844, pl. 14, fig. 7; Gould, Birds Great Brit., i, 1862, pl. 36.—Sharpe, Cat. Birds Brit. Mus., ii, 1875, 284, part.—[*Nyctale tengmalmi*] var. *tengmalmi* Ridgway, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 39.—*Strix passerina dasypus* Bechstein, Allgem. Uebersicht der Vögel, i, 1793, 688.—*Strix dasypus* Bechstein, Getreue Abbild. Naturh. Gegenst., i, heft 9, 1796, 109, in text; Meyer and Wolf, Vög. Deutschl., i, 1810, 82, pl. 6.—*Nyctale dasypus* Gray, List Gen. Birds, 1840, 6.—*Nyctale planiceps*, *N. pinetorum*, and *N. abietinum* Brehm, Isis, 1828, 127.—*Nyctale minor* and *N. baedeker* Brehm, Naumannia, 1855, 370.

- bb.* Darker and larger (wing averaging 170 mm. in male, 177.6 in female); legs more buffy, usually more or less mottled (sometimes heavily) with brown; under tail-coverts broadly streaked with brown. (Northern North America.)

***Cryptoglaux tengmalmi richardsoni* (p. 624).**

- aa.* Smaller (wing less than 160 mm., tail less than 85 mm.); adults with pileum narrowly streaked with white,<sup>a</sup> young with under parts mostly plain ochraceous-buff.

- b.* Toes feathered; remiges and rectrices spotted with white; young with forehead white, the suborbital and auricular regions uniform sooty black. (Northern North America, south, in high mountains, to Guatemala.)

***Cryptoglaux acadica* (p. 627).**

- bb.* Toes naked; remiges and rectrices without white spots; young with forehead and suborbital region light buffy brownish, the auricular region darker brown. (Costa Rica, in highlands.) ..... ***Cryptoglaux ridgwayi* (p. 633).**

**CRYPTOGLAUX TENGMALMI RICHARDSONI (Bonaparte).**

**RICHARDSON'S OWL.**

Similar to *C. t. tengmalmi*<sup>b</sup> but much darker and slightly larger.

*Adults (sexes alike).*—General color of upper parts deep brown (bister to nearly bone brown); pileum thickly spotted with white, the spots of roundish or guttate form; hindneck with very large, partly concealed, irregularly cordate or variously formed spots of white; scapulars with large, partly concealed, spots of white, the exterior ones with outer webs mostly white, margined terminally with brown; wing-coverts near edge of wing and some of the greater coverts with large roundish spots of white; distal half of secondaries crossed by two rows of small white spots (on edge of outer web); outer webs of primaries with roundish white spots, these growing smaller on innermost (proximal) quills; tail crossed by four or five transverse rows of more or less distinct white spots, these not touching shaft on either web; face, including "eyebrows" (superciliary region) grayish white, the portion immediately above upper eyelid and in front of eye dark sooty brown or blackish, the auricular region more or less intermixed with dusky; supra-auricular border

Footnote—Continued.

In *Die Vögel der Paläarktischen Fauna*, heft viii (bd. ii, 2), 1913, pp. 996-999, not seen until the above matter was put in type, Dr. Hartert divides the Palæarctic birds of this species into five geographic subspecies, as follows:

- (1) *Aegolius* [oder *Cryptoglaux*] *tengmalmi tengmalmi* (p. 996); northern Europe and western Siberia.
- (2) *Aegolius* [oder *Cryptoglaux*] *tengmalmi caucasicus* (p. 998); Caucasus. (*Nyctala caucasica* Buturlin, Orn. Monatsber., May, 1907, 82.)
- (3) *Aegolius* [oder *Cryptoglaux*] *tengmalmi sibiricus* (p. 998); middle Siberia. (*Cryptoglaux sibirica*, Buturlin, Nacha Okhota, June, 1910, 78.)
- (4) *Aegolius* [oder *Cryptoglaux*] *tengmalmi jakutorum* (p. 999); northeastern Siberia. (*Nyctala jakutorum* Buturlin, Journ. für Orn., 1908, 287.)
- (5) *Aegolius* [oder *Cryptoglaux*] *tengmalmi magnus* (p. 999); Kamchatka and Kolyma District. (*Nyctala magna* Buturlin, Orn. Monatsber., May, 1907, 80.)

<sup>a</sup> Except, perhaps, in *C. ridgwayi*, the adult of which is unknown.

<sup>b</sup> See page 623.



and a postauricular area uniform dark brown (dark clove brown), the latter dotted on posterior portion with white; sides of neck mostly white, some of the feathers tipped, more or less distinctly, with brown; chin, malar region, and subauricular region immaculate white; across middle of throat a broken band of mixed brown and white, the former predominating; ground color of under parts white, slightly tinged, in places, with pale buff, the breast (except on median line) with large spots of brown (mummy brown to warm sepia), the sides and flanks broadly striped with the same, the under tail-coverts with narrower stripes, sometimes varying to more or less sagittate form; legs buff, more or less deep, usually more or less clouded with brown; under wing-coverts buffy white, more or less spotted or streaked with brown; under surface of remiges grayish brown spotted with white, the spots larger and more roundish on secondaries and inner primaries, narrower and oblique on longer and outermost primaries; bill horn color (in dried skins), the culmen (broadly) and tip dull yellowish; iris lemon yellow.

*Young*.—Remiges and rectrices (only) as in adults; rest of upper parts plain deep sooty brown (warm sepia or vandyke brown), the auricular region and part of suborbital region uniform sooty black; superciliary, loreal, and rictal regions dull white, the feathers with black shafts; under parts plain warm sepia or vandyke brown (somewhat lighter than color of upper parts), intermixed on posterior portion with dull buffy.

*Adult male*.—Length (skins), 230–245 (239); wing, 163–171.5 (168.4); tail, 96–102 (98.6); culmen (from cere), 13.5–14.5 (14.1).<sup>a</sup>

*Adult female*.—Length (skins), 238–281 (259); wing, 171.5–182.5 (178.3); tail, 95.5–107 (104); culmen (from cere), 15–16 (15.3).<sup>b</sup>

Northern North America; breeding in Hudsonian and Upper Canadian zones, from the limit of tree growth in Alaska (Yukon delta; Nulato; Tanana; shores of Bering Sea and Kotzebue Sound; head of Toklat River), Yukon (Rink Rapids; Forty-mile), and Mackenzie (Fort Simpson), south to northern British Columbia (Lake Adolph), northern Alberta, northern Manitoba (Winnipeg?; Red River), Nova Scotia, and Magdalen Islands; south in winter (regularly or casually) to Massachusetts (near Newton; Framingham; Hyde Park), Rhode Island (near Providence, 2 records), Pennsylvania (Allegheny County, March 12, 1896), southern Ontario (Toronto, 9 records; Hamilton; Ottawa), northern Illinois (Kenilworth; Rockford; Cicero), Wisconsin (River Falls), Minnesota (Fort Snelling; Becker County), Colorado (Crested Butte; Breckenridge), northwestern Idaho (Fort Sherman), southern British Columbia (Okanogan; Chilliwack; Quesnelle, Caribou District), Washington

<sup>a</sup> Seven specimens.

<sup>b</sup> Five specimens.

(Whatcom County), and eastern Oregon (Fort Klamath, March 21, 1902); casual in Bermudas?

*Strix* . . . *passerina* (not *Strix passerina* Linnæus) FORSTER, Philos. Trans., lxii 1772, 385 (Hudson Bay).

*Strix tengmalmi* (not of Gmelin, 1788) SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 94, pl. 32.—NUTTALL, Man. Orn. U. S. and Can., Water Birds, 1834, 562; Land Birds, 2d ed., 1840, 146.—AUDUBON, Orn. Biog., iv, 1838, 559, pl. 380.—PEABODY, Rep. Orn. Mass., 1839, 91.—TOWNSEND (J. K.), Journ. Ac. Nat. Sci. Phila., viii, 1839, 152 (n. w. United States).

*Ulula tengmalmi* AUDUBON, Synopsis, 1839, 24.—PUTNAM, Proc. Essex Inst., i, 1856, 226 (Massachusetts).—TRIPPE, Proc. Bost. Soc. N. H., vi, 1871, 113 (Minnesota).

*Vhula tengmalmi* AUDUBON, Birds Am., oct. ed., i, 1840, 122, pl. 32.

*N[octua] tengmalmi* WILLIS, An. Rep. Smithson. Inst. for 1858 (1859), 281 (Nova Scotia, resident).

*Nyctale tengmalmi* HOY, Proc. Ac. Nat. Sci. Phila., vi, 1853, 307 (Wisconsin).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 273 (Nulato, Alaska; notes, etc.).—ALLEN, Am. Nat., iii, 1870, 646 (Massachusetts; three records).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 284, part (Repulse Bay, Keewatin; Ft. Simpson, Mackenzie).

*Nyctale richardsoni* BONAPARTE, Geog. and Comp. List, 1838, 7 (based on Audubon, Orn. Biog., iv, pl. 380); Consp. Av., i, 1850, 54.—KAUP, Jardine's Contr. Orn., 1852, 105.—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 185; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 57 (Canada; Wisconsin).—STRICKLAND, Orn. Syn., 1855, 176.—BREWER, N. Am. Oology, 1857, 73.—BAIRD, Cat. N. Am. Birds, 1859, no. 55.—BOARDMAN, Proc. Bost. Soc. N. H., ix, 1862, 123 (Maine; resident?).—VERRILL, Proc. Essex Inst., iii, 1862, 157 (Maine).—ALLEN, Proc. Essex Inst., iv, 1864, 52 (Massachusetts, rare winter visitant).—BLAKISTON, Ibis, 1863, 50 (Saskatchewan and Mackenzie rivers).—McILWRAITH, Proc. Essex Inst., v, 1866, 82 (Hamilton, Ontario, rare in winter).—COUES, Proc. Essex Inst., v, 1868, 260 (New England).—MAYNARD, Nat. Guide, 1870, 133 (Massachusetts).—HATCH, Bull. Minn. Ac. Sci., i, 1874, 52 (Minnesota; occasional in winter).—BREWER, Proc. Bost. Soc. N. H., xx, 1879, 271 (near Bangor, Maine, Feb., 1878; near Newton, Massachusetts, Feb. 26, 1878).

[*Nyctala*] *richardsoni* GRAY, Hand-list, i, 1869, 51, no. 555.—SHARPE, Hand-list, i, 1899, 296.

*Nyctale richardsoni* GURNEY, Cat. Birds of Prey, 1894, 40.—BROOKS, Auk, xvii, 1900, 105 (s. int. Brit. Columbia, winter of 1898-99).

*Nyctale tengmalmi* var. *richardsoni* RIDGWAY, Am. Nat., vi, May, 1872, 283, 284, 285, footnote; in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 40.

[*Nyctale*] *tengmalmii* var. *richardsonii* COUES, Key N. Am. Birds, 1872, 206.

*Nyctale tengmalmi* . . . var. *richardsonii* COUES, Check List, 1873, no. 327.

[*Nyctale tengmalmi* var. *richardsoni*] *b. richardsoni* COUES, Birds Northwest, 1874, 314.

*Nyctale tegmalmi richardsoni* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 191; Nom. N. Am. Birds, 1881, no. 400.—JENCKS, Bull. Nutt. Orn. Club, vi, 1881, 123 (near Providence, Rhode Island, 1 spec., winter of 1881).

*Nyctale tegmalmi richardsoni* NELSON, Cruise 'Corwin' in 1881 (1883), 76 (shores of Bering Sea and Kotzebue Sound, Alaska).

- Nyctala tengmalmi richardsoni* COUES, Check List, 2d ed., 1882, no. 482.—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 237 (Point de Monts, Quebec, winter resident; notes, etc.).—FOX, Bull. Nutt. Orn. Club, viii, 1883, 61 (Hollis, New Hampshire, Dec. 15, 1879).—JENCKS, Bull. Nutt. Orn. Club, viii, 1883, 122 (near Providence, Rhode Island, Dec. 18, 1882).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 371.—SETON, Auk, iii, 1886, 155 (Red River, Manitoba, resident; Big Plains, Manitoba, rare).—BROWNE, Auk, ii, 1885, 384 (Framingham, Massachusetts, Jan. 1, 1885).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 150 (Nulato, Yukon delta, etc.; habits).—RIDGWAY, Orn. Illinois, i, 1889, 412.—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 542 (Winnipeg, etc., Manitoba; probably resident).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 347, pl. 12, fig. 6 (egg).—MERRILL, (J. C.), Auk, xiv, 1897, 353 (Ft. Sherman, Idaho, 2 specs., spring of 1894).—COOKE, Bull. 44, Col. Agric. Exp. Sta., 1898, 160 (Crested Butte, Colorado, Oct. 14, 1896); Bull. 56, 1900, 205 (Breckenridge, Colorado, Dec. 28, 1882).—RHODES, Auk, xvi, 1899, 311 (Allegheny Co., Pennsylvania, March 12, 1896).—BROOKS, Auk, xx, 1903, 281 (Quesnelle, Caribou Distr., Brit. Columbia).—DEANE, Auk, xx, 1903, 305 (Kenilworth, Illinois, Dec. 26, 1902; Rockford, Illinois, Oct. 15, 1884), 433 (Cicero, Illinois, Dec., 1902).—THAYER, Auk, xxiii, 1906, 222 (Hyde Park, Massachusetts, Nov. 26, 1905).—ROBERTS, in Wilcox's Hist. Becker Co., Minnesota, 1907, 174 (occasional in winter).
- N[yctala] tengmalmi richardsoni* COUES, Key N. Am. Birds, 2d ed., 1884, 512.—RIDGWAY, Man. N. Am. Birds, 1887, 260.
- Cryptoglaux tengmalmi richardsoni* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxi, July, 1904, 413.—FLEMING, Auk, xxiv, 1907, 74 (Toronto, Ontario, in winter; 9 records).—EIFRIG, Auk, xxiv, 1907, 111 (Ottawa, Ontario, Nov. 16, 1906).—ALLEN (G. M.), Auk, xxv, 1908, 235 (Milford, Maine, Dec. 22, 1906).—EDSON, Auk, xxv, 1908, 433 (Glacier, Whatcom Co., Washington, 1 spec.).—KERMODE, Provincial Mus. Victoria, 1909, 46 (Okanogan and Chilliwack, Brit. Columbia).
- Glaux funerea richardsoni* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 371.—DAWSON, Auk, xxv, 1908, 484 (near Glacier, Washington, Jan. 17, 1907).
- Cryptoglaux funerea richardsoni* GRINNELL (J.), Condor, xi, 1909, 205 (Forty-mile, Yukon Terr.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 171.—BOWLES, Auk, xxviii, 1911, 173 (Bellingham, Washington, Jan. 17, 1905).
- Aegolius* (oder *Cryptoglaux*) *tengmalmi richardsoni* HARTERT, Die Vögel der Paläarkt. Fauna, heft viii (bd. ii, 2), Aug., 1913, 998 (geog. range, etc.).
- Nyctale kirtlandi* (not *N. kirtlandii* Hoy) ELLIOT, Ibis, 1872, 48, part (crit., as to plumage of young; etc.).
- Scotophilis acadica* (not *Strix acadica* Gmelin) JARDINE, Contr. Orn., 1848, 81 (Bermudas, casual; see Jardine, Contr. Orn., 1850, 7.)

### CRYPTOGLAUX ACADICA (Gmelin).

#### SAW-WHET OWL.

*Adults (sexes alike).*—General color of upper parts grayish bister to nearly vandyke brown; <sup>a</sup> the pileum narrowly streaked with white,

<sup>a</sup> The more grayish brown specimens from the Rocky Mountains, the more reddish brown ones from the Pacific coast (British Columbia to Jalisco, Mexico), the average color of eastern specimens being intermediate, though averaging decidedly near that of Pacific coast specimens,



the streaks sometimes (in younger specimens?) restricted to forehead and sides of crown; lower hindneck with large, mostly triangular or broadly hastate, mostly concealed, spots of white; exterior scapulars with outer webs mostly white, margined terminally with brown; distal larger wing-coverts with a few spots of white; outermost feather of alula more or less broadly edged with white; outer webs of outer primaries spotted along edge with white; tail crossed by two or three interrupted narrow bands of white and margined at tip with the same, the transverse spots forming the bands not touching shaft on either web; superciliary, orbital, and loreal regions and chin dull white, the eye margined above and in front with dusky, this in front of eye sometimes spreading over greater portion of lores; auricular region dull buffy white to cinnamon-buff,<sup>a</sup> broadly streaked with brown; across middle of throat and thence, on each side, to the postauricular ruff, a band of brown or chestnut-brown spots or streaks, this sometimes advancing anteriorly, in middle portion, forming more or less of a patch on upper throat; postauricular ruff streaked with brown and white, the former predominating; rest of under parts white, more or less tinged or suffused with pale buff, broadly striped or longitudinally spotted with light mars brown or chestnut-brown; under tail-coverts immaculate white or, more rarely, with small and indistinct terminal spots or mesial streaks of pale brown; legs pale buff to cinnamon-buff, the toes paler (dull white or buffy white); under wing-coverts buffy white to light cinnamon-buff, becoming white along edge of wing, sparsely spotted with light brown or chestnut-brown near edge of wing; under primary coverts white, broadly and abruptly tipped with grayish brown; under surface of remiges grayish brown, the inner webs of secondaries and proximal primaries with large spots of white, the outer primaries sometimes with a few small, narrow, oblique white spots, sometimes immaculate; bill black; iris lemon yellow; naked portion of toes pale dull yellowish (in life).

*Young*.—Remiges and rectrices (only) as in adults; superciliary region and anterior portion of forehead white, in strong contrast with the uniformly blackish brown or (more rarely) lighter brown of auricular region; rest of pileum, together with upper parts (except remiges, rectrices, etc.), plain deep brown (vandyke brown to nearly chestnut-brown); chin and sides of throat (subauricular region) dull white; throat, chest, and breast plain brown (similar to but lighter than color of upper parts); rest of under parts plain tawny-buff or cinnamon-buff.

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<sup>a</sup> The cinnamon-buff color strongly developed, however, among specimens examined, only in the type of *Nyctala acadica scotae* (Osgood), from the Queen Charlotte Islands.

*Adult male*.—Length (skins), 165–195 (177); wing, 133.5–139 (136.3); tail, 65–70 (67.4); culmen (from cere), 11–13 (12).<sup>a</sup>

*Adult female*.—Length (skins), 175–202 (185); wing, 135–146 (141.7); tail, 69–73 (71.3); culmen (from cere), 11–14 (12.5).<sup>b</sup>

Northern North America (except Arctic and Hudsonian zones and northern portion of Canadian Zone), breeding in Canadian and Transition zones and extreme northern portion of Upper Austral Zone, from Nova Scotia and New Brunswick westward through Quebec, Ontario (north to Moose Factory), Manitoba (Red River; Winnipeg), and Alberta (30 miles southwest of Edmonton), to British Columbia (Victoria; Comox; Queen Charlotte Islands) and extreme southern Alaska (Mitkof Island), southward to Massachusetts (Braintree; Tyngsboro; etc.), Pennsylvania, mountains of Maryland (Garrett County), northern Indiana (Carroll and Newton counties), northern Illinois (Cook County), southern Nebraska, Colorado (Loveland; Arkins), New Mexico, central Arizona (San Francisco Mountain), higher Sierra Nevada of California (head of South Fork of American River; Donner Lake), and Oregon (Washington County)—probably on higher mountains of Mexico and Guatemala; in winter migrating irregularly (according to severity of the season) southward to Virginia,

<sup>a</sup> Eight specimens.

<sup>b</sup> Nine specimens.

Locality.	Wing.	Tail.	Culmen.
MALES.			
Two adult males from Pennsylvania (1) and Maryland (1) .....	135.2	65.2	11
Three adult males from North Dakota (1), Montana (1), and Wyoming (1) .....	136.3	67.2	12.2
One adult male from British Columbia (Victoria) .....	135.5	67.5	12.5
One adult male from Queen Charlotte Islands (type of <i>Nyctala acadica scotæa</i> Osgood) .....	136.5	70	12
One adult male from Queratero, Mexico .....	139	70	13
FEMALES.			
Two adult females from District of Columbia .....	139	71	11.7
Three adult females from Montana (2) and Colorado (1) .....	143.8	71.7	13
Two adult females from Washington and Oregon .....	137.2	69.5	12.5
One adult female from California (Ft. Tejon) .....	145	73.5	12.5
One adult female from southern Jalisco, Mexico .....	145	72.5	12.5

I am not able to make out any geographic variation in this species except a slight average difference in the hue of the brown of the upper and under parts, which is reddest in examples from the Pacific coast district (British Columbia to southern Mexico), more grayish brown in those from the Rocky Mountains, intermediate, but nearer the former, in those from the Atlantic side. It is possible that an adequate series may show these differences to be sufficiently marked and constant to warrant subspecific subdivision. The only peculiarities that I am able to observe in the type of *Nyctala acadica scotæa* consist in the deep ochraceous-buff auricular region and more reddish brown of the pileum; but I am of the opinion that these characters will not prove constant when more specimens from the Queen Charlotte Islands have been examined.

southern Ohio, southern California, etc., casually to North Carolina (Newbern, February, 1892), South Carolina (Weston, Richland County), Georgia (Buck Hummock, near Tybee, Jan. 1, 1911), and Louisiana (near Madisonville, December, 1889). Mexican and Guatemalan localities: Mexico (Chimalpa, Valley of Mexico); Oaxaca (Cinco Señores); Jalisco (Los Masos); Queratero (Pinál de Amoles); Guatemala (Quezaltenango).

[*Strix*] *acadica* GMELIN, Syst. Nat., i, pt. 1, 1788, 296 (North America; based on *Acadian Owl* Latham, Syn., i, pt. i, 149, no. 38, pl. 5, fig. 2).—BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 355; Obs. Wilson's Am. Orn., 1826, [15].

*Strix acadica* DAUDIN, Traité d'Orn., 1800, 206.—VIEILLOT, Ois. Am. Sept., i, 1807, 49.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 38; ii, 1828, 436 (crit.); Obs. 2d ed. Cuv., 1830, 52.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 97.—JARDINE, ed. Wilson's Am. Orn., ii, 1832, 66.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 137; 2d ed., 1840, 145.—AUDUBON, Orn. Biog., ii, 1834, 567, pl. 199; v, 1839, 397.—PEABODY, Rep. Orn. Mass., 1839, 70.—DE KAY, Zool. N. Y., ii, 1844, pl. 11, fig. 23.

[*Scotophilus*] *acadica* SWAINSON, Classif. Birds, ii, 1837, 217.

*Nyctale acadica* BONAPARTE, Geog. and Comp. List, 1838, 7.—GAMBEL, Journ. Ac. Nat. Sci. Phila., i, 1847, 31 (Monterey, California).—KAUP, Contr. Orn., 1852, 104; Trans. Zool. Soc. Lond., iv, 1859, 206.—HOY, Proc. Ac. Nat. Sci. Phila., vi, 1853, 307 (Racine, Wisconsin).—CASSIN, Illustr. Birds Calif., Texas, etc., 1854, 285; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 58.—STRICKLAND, Orn. Syn., 1855, 176.—NEWBERRY, Rep. Pacific R. R. Surv., vi, chapt. ii, 1857, 77 (Oregon).—BREWER, N. Am. Oology, i, 1857, 74.—SCLATER, Proc. Zool. Soc. Lond., 1858, 295 (Cinco Señores, Oaxaca).—BAIRD, Cat. N. Am. Birds, 1859, no. 57.—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon, California).—COOPER, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 156 (Ft. Vancouver, Washington, Feb.; Dalles, Washington, Dec.); Orn. Calif., 1870, 436 (Ft. Tejon; Ft. Vancouver).—VERRILL, Proc. Essex Inst., iii, 1862, 143 (Oxford Co., Maine, resident).—LORD, Proc. Roy. Artil. Inst. Woolwich, 1864 (Brit. Columbia).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 50 (Ft. Whipple, Arizona); Proc. Bost. Soc. N. H., xii, 1868, 120 (South Carolina); Check List, 1873, no. 328; Birds Northwest, 1874, 315.—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity of New York City).—BROWN, Ibis, 1868, 419 (Vancouver I.).—RIDGWAY, Am. Nat., vi, 1872, 284, 285 (crit. as to plumage of young; synonymy); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 43; Orn. Fortieth Parallel, 1877, 572 (Thousand Spring Valley, Nevada, Sept. 24, 1868); Field and Forest, ii, 1877, 210 (Colorado, breeding); Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 401.—SNOW, Birds Kansas, 1873, 2 (rare).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 287 (Comax, Brit. Columbia; w. Mexico; etc.).—COALE, Bull. Nutt. Orn. Club, ii, 1877, 83 (Chicago, Illinois; habits, etc.).—DEANE, Bull. Nutt. Orn. Club, ii, 1877, 84 (Newton, Hingham, and Deer I., e. Massachusetts, April, June, July; probably breeding).—BENDIRE, Proc. Bost. Soc. N. H., 1877, 131 (Camp Harney, Oregon, in winter).—LANGDON, Birds Cincinnati, 1877, 12 (Avondale, Hamilton Co., Ohio).—BREWSTER, Bull. Nutt. Orn. Club, vi, 1881, 143-145 (Tyngsboro, Massachusetts, breeding; habits; descr. nest and eggs); vii, 1882, 23-25 (habits, changes of plumage, etc.).—FRANCIS, Bull. Nutt. Orn. Club, vi, 1881, 185 (Braintree, Massachusetts, breeding; descr. nest).—REID, Bull. U. S. Nat.



- Mus., no. 25, 1884, 215 (Bermuda, 1 spec., Jan. 12, 1849).—MEARNS, Auk, vii, 1890, 54 (San Francisco Mt., Arizona, breeding).—BANGS, Auk, xi, 1894, 77 (Wareham, Massachusetts, breeding; descr. nest).
- [*Nyctale*] *acadica* BONAPARTE, Consp. Av., i, 1850, 54.—COUES, Key N. Am. Birds, 1872, 206.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116 (Mexico).
- [*Nyctale*] *acadica* RIDGWAY, Ann. Lyc. N. Y., x, 1874, 378 (Illinois).
- [*Nyctala*] *acadica* GRAY, Hand-list, i, 1869, 51, no. 556.—SHARPE, Hand-list, i, 1899, 296.
- Nyctala acadica* COUES, Check List, 2d ed., 1882, no. 483.—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 237 (Point de Monts, Quebec, resident).—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 243 (Moose Factory, n. Ontario).—BUTLER, Bull. Brookville Soc. N. H., no. 2, 1886, 24 (Franklin Co., Indiana, winter and spring).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 372.—SETON, Auk, iii, 1886, 155 (Red R., Manitoba, rare resident).—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon, July).—DUTCHER, Auk, iii, 1886, 440 (Long Island records).—RALPH and BAGG, Trans. Oneida Hist. Soc., iii, 1886, 120 (Oneida Co., New York, breeding; descr. nests and eggs).—WEBSTER (F. S.), Auk, iv, 1887, 161 (District of Columbia, Oct. 3, 1886).—EVERMANN, Auk, v, 1888, 351 (Carroll Co., Indiana, breeding).—RICHMOND, Auk, vi, 1889, 189 (District of Columbia, March 12, 1889, Feb. 12, 1859, Nov. 1, 1878, Oct., 1886).—RIDGWAY, Orn. Illinois, i, 1889, 413.—RIVES, Cat. Birds Virg., 1890, 63 (Cobbs I., 2 specs.).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 542 (Red R. Valley, Manitoba, resident; Winnipeg, 2 specs.).—HASBROUCK, Auk, viii, 1891, 313 (District Columbia, Dec. 12, 1890, Jan. 4 and Feb. 4, 1891).—LAWRENCE (R. H.), Auk, xii, 1892, 44 (Grays Harbor, Washington, resident).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 353, pl. 12, fig. 7 (egg).—RHODS, Proc. Ac. Nat. Sci. Phila., 1893, 41 (Vernon, Victoria, and Vancouver, Brit. Columbia; Tacoma, Washington).—BRIMLEY, Auk, x, 1893, 242 (Newbern, North Carolina, Feb., 1892).—STONE, Birds E. Penn. and N. J., 1894, 91 (records).—COOKE, Auk, xi, 1894, 183 (Ft. Collins, Colorado, Jan.); Birds Colorado, 1897, 77 (resident, breeding between 7,000 and 8,000 ft.); Bull. 56, Col. Agric. Exp. Sta., 1900, 205 (Breckenridge, Colorado, 2 specs.; breeding?).—ULREY and WALLACE, Proc. Ind. Ac. Sci., 1895, 152 (Wabash, Indiana, Nov. 20, 1894).—TUTTLE, Auk, xii, 1895, 191 (Erie Co., Ohio, Nov. 9, 1890).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 11 (Chimalpa, Valley of Mexico; Cinco Señores, Oaxaca; Quezaltenango, Guatemala).—MERRILL, Auk, xiv, 1897, 354 (Ft. Sherman, Idaho, Jan. and spring).—BEYER, Proc. La. Soc. Nat. for 1897-99 (1900), 100 (near Madisonville, Louisiana, 1 spec., Dec., 1889).—FLEMING, Auk, xviii, 1901, 38 (Elmsdale and Port Sydney, Ontario).—MAILLIARD, Condor, iv, 1902, 18 (Point Reyes, California, 2 specs., Dec. 11 and 23, 1901).—RATHBUN (S. F.), Auk, xix, 1902, 134 (Seattle, Washington, Oct. 17, 1901).—RAY, Auk, xx, 1903, 183 (Glen Alpine, central Sierra Nevada, 6,700 ft., Aug.).—EIFRIG, Auk, xxi, 1904, 240 (Garrett Co., Maryland, July 6).—RHODS and PENNOCK, Auk, xxii, 1905, 200 (Delaware, winter resident).—JONES (L.), Wilson Bull., no. 57, 1906, 115 (Cleveland, Ohio, fall and winter).—ROBERTS, in Wilcox's Hist. Becker Co., Minnesota, 1907, 174 (resident).—CAMERON, Auk, xxv, 1908, 55 (near Knowlton, Montana, July 12, 1907).—HOLLISTER, Auk, xxv, 1908, 221 (Newton Co., n. w. Indiana, breeding).—PENNOCK, Auk, xxv, 1908, 286 (Staunton, Delaware, in winter).—BEYER, ALLISON, and KOPMAN, Auk, xxv, 1908, 443 (Madisonville, Louisiana, Dec., 1889).—WARREN (E. R.), Auk, xxvii, 1910, 146 (Chaffee Co., Colorado, Dec.).

- N[yctala] acadica* COUES, Key N. Am. Birds, 2d ed., 1884, 513.—RIDGWAY, Man. N. Am. Birds, 1887, 260.
- Ulula acadica* AUDUBON, Synopsis, 1839, 24.—MARTENS, Journ. für Orn., 1859, 212 (Bermudas).—PUTNAM, Proc. Essex Inst., i, 1856, 204 (Massachusetts).—BLAND, An. Rep. Smithson. Inst. for 1858 (1859), 287 (Bermudas).—SCHLEGEL, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 8, footnote; no. 36 (Revue), 1873, 18.
- Ulula acadica* AUDUBON, Birds Am., oct. ed., i, 1840, 123, pl. 33.
- Athene acadica* KNEELAND, Proc. Bost. Soc. N. H., vi, 1857, 233 (Keeweenaw Point, Lake Superior).
- Noctua acadica* WILLIS, An. Rep. Smithson. Inst. for 1858 (1859), 281 (Nova Scotia, resident).
- Cryptoglaux acadica* GRINNELL (J.), Auk, xix, 1902, 93 (Newport, Oregon, Dec. 14, 1896).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxi, 1904, 413.—WILSON (B. H.), Wilson Bull., no. 54, 1906, 4 (Scott Co., Iowa, Feb.-April).—DYKE, Auk, xxiii, 1906, 337 (Plymouth Co., Massachusetts, breeding).—FLEMING, Auk, xxiv, 1907, 74 (Toronto, Ontario, winter; breeding?).—MAILLIARD, Condor, x, 1908, 94 (San Geronimo, California, Oct. 28, 1906).—KERMODE, Provincial Mus. Victoria, 1909, 46 (Victoria, Vancouver I.; Okanagan, and Chilliwack, Brit. Columbia).—STANSELL, Auk, xxvi, 1909, 394 (30 miles s. w. of Edmonton, Alberta; 1 spec. seen, winter of 1907-1909).—WAYNE, Auk, xxviii, 1911, 112 (Weston, Richland Co., South Carolina, Nov. 11, 1909).
- Cryptoglaux acadica acadica* GRINNELL, Pacific Coast Avifauna, no. 3, June, 1902, 35 (California range).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 172.—BOWLES, Auk, xxviii, 1911, 173 (North Yakima, Washington, breeding).—TAVERNER and SWALES, Auk, xxviii, 1911, 329-334 (migrations).—GRINNELL (J.), Pacific Coast Avifauna, no. 8, 1912, 13.—WILLETT, Pacific Coast Avifauna, no. 7, 1912, 51 (San Jacinto Mts., s. California, 9,200 ft., Aug. 11, 1898).—JEWETT, Auk, xxix, 1912, 102 (near Gardner, Douglas Co., Oregon, Oct. 12, 1911).—SMYTH, Auk, xxix, 1912, 517 (Montgomery Co., Virginia, Jan.).
- [*Cryptoglaux acadica acadica*] HOXIE, Auk, xxviii, 1911, 265 (Buck Hummock, near Tybee, Georgia, Jan. 1, 1911).
- Glaux acadicus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 372.—HENDERSON, Univ. Colo. Stud. Zool., vi, 1909, 230 (mountains of Colorado, breeding up to 8,500 ft.).
- Nyctale acadia* KIRTLAND, Proc. Cleveland Ac. Sci., 1874, 252 (n. Ohio).
- [*Strix*] *acadiensis* LATHAM, Index Orn., i, 1790, 65 (emendation of *S. acadica* Gmelin).
- Strix albifrons* SHAW, Nat. Misc., v, 1794, pl. 171 (Canada; =young); Gen. Zool., vii, 1809, 238.—LATHAM, Index Orn., Suppl., 1802, 14.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 41.
- Bubo albifrons* VIEILLOT, Ois. Am. Sept., i, 1807, 54.
- Scops albifrons* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 51.
- Nyctale albifrons* CASSIN, Illustr. Birds Calif., Texas, etc., 1854, 187; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 57 (Racine, Wisconsin; near Montreal).—BAIRD, Cat. N. Am. Birds, 1859, no. 56.—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 50 (Ft. Whipple, Arizona).—McILWRAITH, Proc. Essex Inst., vi, 1866, 82 (Hamilton, Ontario).—COOPER, Orn. Calif., 1870, 435 (Nevada, near California line, lat. 39°, 7,000 ft.).—VERRILL, Am. Nat., v, 1871, 119 (Maine).
- [*Nyctala*] *albifrons* GRAY, Hand-list, i, 1869, 52, no. 557.

- Strix passerina* (not of Linnæus) WILSON, Am. Orn., iv, 1811, 66, pl. 34, fig. 1.  
 (?) *Strix passerina* AUDUBON, Orn. Biog., v, 1839, 269, pl. 432.  
*S[trix] passerina* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 355; Obs. Wilson's Am. Orn., 1826, [15].  
 (?) *Noctua passerina* AUDUBON, Synopsis, 1839, 22; Birds Am., oct. ed., i, 1840, 116, pl. 29.  
*Noctua passerina* WILLIS, An. Rep. Smithson. Inst. for 1858 (1859), 281 (Nova Scotia).  
*Ulula passerina* JAMESON, ed. Wilson's Am. Orn., i, 1831, 109.  
*St[rix] wilsonii* BOIE, Isis, 1828, 315 (new name for *Strix passerina* Wilson, pl. 34, fig. 1).  
*Strix dalhousei* "Hall, Ms." MACGILLIVRAY, ed. Cuvier's Règne Anim., 1829, pl. 8.  
*Strix frontalis* LICHTENSTEIN, Abh. Ak. Berlin, 1838 (1839), 430 (Monterey, California; =young; coll. Berlin Mus.).—BAIRD, in Rep. Stansbury's Surv. Great Salt Lake, 1852, 372 (California).  
 [*Athene*] *frontalis* LICHTENSTEIN, Nom. Av. Mus. Berol., 1854, 8.  
*Nyctale kirtlandii* HOY, Proc. Ac. Nat. Sci. Phila., vi, 1852, 210, 211 (Racine, Wisconsin; =young); vi, 1853, 307.—CASSIN, Illustr. Birds Calif., Texas, etc., 1854, 63, pl. 11.  
*Nyctala acadica scotæa* OSGOOD, N. Am. Fauna, no. 21, Sept., 1901, 43 (Massett, Queen Charlotte Islands, Brit. Columbia; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xix, 1902, 319.  
*Cryptoglaux acadica scotæa* GRINNELL (J.), Auk, xix, Jan., 1902, 93, in text (crit.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxi, 1904, 413; Check List, 3rd ed., 1910, 172 (Queen Charlotte Islands to Puget Sound).—KERMODE, Provincial Mus. Victoria, 1909, 46 (Queen Charlotte Islands).—JEWETT, Auk, xxvii, 1910, 340 (Douglas Co., Oregon, 3 specs., summer).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 65 (Mitkof I., s. Alaska; crit.).  
*Cryptoglaux acadica scotæa* BOWLES, Auk, xxiii, 1906, 143 (Tacoma, Washington, Oct. 19, 1904).  
*Glaux acadicus scotæus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 372.—DAWSON, Auk, xxv, 1908, 484 (Nisqually, Washington, Dec., 1906).

### CRYPTOGLAUX RIDGWAYI Alfaro.

#### COSTA RICAN SAW-WHET OWL.

*Young male*.—Similar to the corresponding stage of *C. acadica* but latero-frontal region and general color of under wing-coverts wood brown instead of white, and without any white on outer surface of wings or on tail, and toes unfeathered (except basal half of the outer).

Above plain warm sepia brown, or between sepia and seal brown, inclining on hindneck to vandyke or mummy brown, the tail darker (between clove brown and seal brown), the remiges grayer brown (between sepia and hair brown), narrowly edged with paler; no trace of white markings on outer surface of wings, except a narrow edging to outermost feather of alula, nor on tail; but inner webs of innermost secondaries with irregular spots of dull whitish near the margins; latero-frontal region wood brown; anterior portion of sub-orbital region similar but rather paler, deepening on auricular region into dark brown (rather darker than color of pileum); bristly



feathers of loreal region blackish; throat deep brown, like pileum, with a band of dull buffy whitish immediately below; rest of underparts plain cinnamon-buff or clay color, deeper anteriorly, where passing into russet on sides of breast, decidedly paler on legs and under tail-coverts; under wing-coverts wood brown, tinged with deeper brown, especially on under primary coverts; under surface of remiges plain deep hair brown, the innermost secondaries with irregular dull whitish spots toward edge of inner web; bill blackish; toes (except basal half of the outer) naked, light colored; claws dark horn color; length (skin), 185; wing, 143; tail, 64; culmen (from anterior edge of cere), 13; tarsus, 25; middle toe, 20.

High mountains of Costa Rica (Cerro de la Candelária, near Escasú).

*Cryptoglaux ridgwayi* ALFARO, Proc. Biol. Soc. Wash., xviii, Oct. 17, 1905, 217 (Cerro de la Candelaria, near Escasú, Costa Rica; coll. U. S. Nat. Mus.).

*Glaux ridgwayi* CARRIKER, Ann. Carnegie Mus., vi, 1910, 479.

#### Genus SCOTIAPTEX Swainson.

*Scotiaptex* SWAINSON, Classif. Birds, i, 1836, 327; ii, 1837, 217. (Type, *Strix cinerea* Gmelin=*S. nebulosa* Forster.)

Very large Bubonidæ (wing about 405–460 mm.) without ear-tufts, relatively small eyes, bill, and feet, enormous, conspicuously asymmetrical and broadly operculate ear-conchs, bill nearly hidden by long, antrorse loreal feathers, and toes densely covered by long, hair-like feathers nearly concealing the claws.

Bill relatively small; top of cere more than two-thirds as long as culmen, ascending and slightly arched basally. Nostril rather large, nearly circular or longitudinally broadly oval, opening in anterior edge of cere. Ear-conch more than half as long (vertically) as greatest depth of head, reniform, the anterior side provided with a large and broad operculum or dermal flap, elsewhere margined with a narrow free dermal rim; ear-orifice opening below the median transverse "bridge;" ears slightly asymmetrical, that on left side considerably broader than that on right. Wing very large, with longest primaries exceeding distal secondaries by less than one-third the total length of wing; sixth and seventh, or sixth, seventh, and eighth,<sup>a</sup> primaries longest, the tenth (apparent outermost) shorter than fourth;<sup>b</sup> four outer primaries with inner webs emarginated or sinuated (one or two additional ones sometimes showing an appreciable sinuation). Tail nearly three-fourths as long as wing, strongly rounded. Tarsus equal to or longer than middle toe with claw, densely covered all round with long, soft, hair-like feathers, the toes (except terminal

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<sup>a</sup> Fourth and fifth, or third, fourth, and fifth, from outside.

<sup>b</sup> Seventh from outside.

phalanges and under side) similarly clothed, the distal feathers overlapping base of claws.

*Coloration*.—Dusky grayish brown, or sooty, and grayish white, the former predominating above, the latter prevailing below; the upper parts varied by irregular markings having a transverse tendency, the lower parts with the darker markings in the form of ragged longitudinal stripes giving way to transverse bars on flanks; face grayish white with narrow concentric rings of dusky; bill pale yellow; iris lemon yellow.

*Range*.—Boreal forests of Northern Hemisphere. (Monotypic.)

#### KEY TO THE SUBSPECIES OF SCOTIAPTEX NEBULOSA.

- a. Coloration darker, with darker stripes less evident above, less sharply defined below, the white of under parts more barred or mottled. (Northern North America) ..... *Scotiaptex nebulosa nebulosa* (p. 635).
- aa. Coloration paler, with darker stripes distinct, both above and below, the white of under parts to a great extent immaculate. (Northern Europe and Asia.)  
*Scotiaptex nebulosa lapponica* (extralimital).<sup>a</sup>

#### SCOTIAPTEX NEBULOSA NEBULOSA (Forster).

##### GREAT GRAY OWL.

*Adults (sexes alike)*.—General color of upper parts dusky grayish brown or sooty, broken by transverse mottlings (mostly on edges of

<sup>a</sup> *Strix lapponica* Thunberg, K. Vet.-Ak. nya Handb., xix, 1798, 184 (Lappmark); Naumann, Vög. Deutschl., Nachtr., 1847, pl. 349.—*Uula lapponica* Lesson, Man. d'Orn., i, 1827, 113.—*Surnia cinerea* Gould, Birds Europe, i, pt. 14, Sept. 1, 1835, pl. 42 and text.—*Syrnium lapponicum* Strickland, Orn. Syn., i, 1855, 188; Dresser, Birds Europe, v, 1878, pl. 308 and text; Sharpe, Cat. Birds Brit. Mus., ii, 1875, 254.—[*Syrnium cinereum*] var. *lapponicum* Ridgway, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 29.—*Scotiaptex cinerea lapponicum* Allen, Bull. Am. Mus. N. H., xxi, 1905, 245 (Marcova, n. e. Siberia).—*Scotiaptex cinerea lapponica* American Ornithologists' Union, Suppl. to Check List, 1889, 21; Abridged Check List, 1889, and Check List, 2 ed., 1895, no. 370a.—*Strix cinerea lapponica* Coues, Check List, 2d ed., 1882, no. 475.—*Scotiaptex nebulosa lapponica* Preble, North Am. Fauna, no. 22, 1902, 109.—*Asio lapponicus* Seeborn, Ibis, 1882, 373 (Archangel, n. Russia).—*Stryx barbata* Pallas, Zoogr. Rosso-Asiat., i, 1826, 318, pl. 2 (eastern Siberia).—*Syrnium cinereum* (not *Strix cinerea* Gmelin) Bonaparte, Geog. and Comp. List, 1838, 6, part; Fritsch, Vög. Europ., 1869–70, pl. 12, fig. 6.—*Strix microphthalmos* Tyzenhauza, Orn. Pow., i, 1842, 86, frontispiece (new name for *Strix lapponica* Thunberg).

Specimens from the Yukon delta, Alaska, formerly referred to this form, prove to be rather light-colored examples of *S. n. nebulosa*.

In Die Vögel der Paläarktischen Fauna, heft viii (bd. ii, 2), August, 1913, not seen until after the above was in type, Dr. Hartert separates the Palæarctic representatives of this species into three subspecies, as follows: (1) *Strix nebulosa lapponica* (p. 1014); northern Europe and western Siberia. (2) *Strix nebulosa barbata* (p. 1016); eastern Siberia. (3) *Strix nebulosa sakhalinensis* (p. 1016); Sakhalin Island (*Syrnium cinereum sakhalinense* Buturlin, Journ. für Orn., July, 1907, 332, 334). It is possible that the light colored examples from western Alaska, above referred to, may belong to the East Siberian form (*Scotiaptex nebulosa barbata*), but comparison with examples of the latter has not yet been made.

of feathers) of grayish white, the uniformly sooty median portions of the feathers producing an effect of irregular dusky stripes, most conspicuous on back and scapulars; the more anterior parts with edges of feather more regularly barred, the mottling more profuse on rump and upper tail-coverts, producing a more grayish appearance; outer webs of wing-coverts variegated by whitish mottlings; alulæ and primary coverts with very indistinct bands of paler brown; secondaries crossed by about nine bands (one terminal, three concealed by greater coverts) of pale grayish brown, fading into paler (sometimes whitish) on edges of outer webs; primaries crossed by nine transverse series of quadrate spots of mottled pale brownish gray, on outer webs, those beyond the emarginations indistinct, except the terminal crescentic bar; proximal secondaries and middle rectrices with coarse mottling or marbling of dusky brown or sooty and grayish white, the markings usually with more or less of a tendency to form irregular, broken bars; rest of tail dusky crossed by about nine paler bands, these merely marked off by a narrow line or edging of whitish or pale brownish gray inclosing a grayish brown, sometimes slightly mottled, space, though toward base of the rectrices the mottling is more confused and the bands confused or broken up; ground color of under parts grayish white, each feather of neck, chest, breast, and abdomen with a broad, irregularly serrated, median stripe of dusky brown or sooty; sides, flanks, anal region, and under tail-coverts narrowly banded or barred with sooty brown and grayish white, the legs with narrower, more irregular bars; "eyebrows" (superciliary region), lores, and chin grayish white, with a dusky space immediately in front of eye; face grayish white with distinct concentric semicircular bars of dusky brown; facial circle dark brown passing into white on foreneck, where interrupted by a spot of brownish black on throat; bill light dull yellow; iris lemon yellow.

*Downy young*.—Buffy white, the down on hindneck, back, scapulars, and wings dark sooty brown basally, the tips pale dull buff or pale brownish buffy.

*Adult male*.—Length (skins), 575–625 (606); wing, 410–447 (433); tail, 300–323 (313.6); culmen, from cere, 23–26.5 (24.7).<sup>a</sup>

*Adult female*.—Length (skins), 610–670 (636); wing, 430–465 (446); tail, 310–347 (323.3); culmen, from cere, 24.5–28.5 (26.1).<sup>b</sup>

Northern North America; breeding in Hudsonian and Upper Canadian zones, from tree limit in Alaska and northwestern Macken-

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<sup>a</sup> Five specimens.

<sup>b</sup> Seven specimens.

According to Ernest E. Thompson (Ernest Thompson Seton) a fully grown young male specimen of this species weighed 26 ounces and had 480 square inches of wing surface, or  $18\frac{6}{13}$  square inches to each ounce of weight—nearly twice that of *Cathartes aura*. The tail surface was 100 square inches. (Proc. U. S. Nat. Mus., xiii, 1890, 541.)



zie southward to northern British Columbia, central Alberta, north-western Idaho (Fort Sherman), northern Manitoba (Lake Winnipeg), and northern Ontario (Chisholm, Nipissing District); in winter migrating southward to Rhode Island (Providence; Wickford), Connecticut (East Haven), New Jersey (Suffolk County), Pennsylvania (Delaware and Lackawanna counties), northern Ohio, northern Illinois, Minnesota, North Dakota (Mandan), Wyoming (Wells P. O.), Colorado (San Juan County), Oregon (Des Chutes Basin), and northern California (upper Sacramento Valley).

*Strix nebulosa* FORSTER, Philos. Trans., lxii, 1772, 386, 424 (Severn River, Keewatin, Canada).—(?)SHAW, Nat. Misc., i, 1790, pl. 25 and text.—TEMMINCK, Cat. Syst., 1807, 19.

[*Strix*] *nebulosa* GMELIN, Syst. Nat., i, pt. 1, 1788, 291.—LATHAM, Index Orn., i, 1790, 58.

*Scotiaptex nebulosa* PREBLE, North Am. Fauna, no. 22, Oct. 31, 1902, 109.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 340.—ALLEN (F. H.), Auk, xxi, 1904, 278 (Dedham, Massachusetts, Feb. 7, 1904).—EIFRIG, Auk, xxiii, 1906, 316 (near Ottawa, Ontario, Nov. 20, 1905).—DEANE, Auk, xxiv, 1907, 215 (records for Jan. and Feb., 1907, in Maine, Vermont, New York, Quebec, Ontario, etc.; Mandan, North Dakota; Detroit, Minnesota; near Providence, Rhode Island, Nov. 19, 1906, in 1870, and March 25, 1883).—ALLEN (G. M.), Auk, xxv, 1907, 234 (Stockton Springs, Maine, Jan.).—SETON, Auk, xxv, 1908, 71 (south of Ft. Resolution, Mackenzie, breeding).—HOWE, Auk, xxv, 1908, 84 (Concord, Massachusetts, Dec., 1906).—KERMODE, Provincial Mus. Victoria, 1909, 46 (Vernon, Stuart Lake, and Chilliwack, Brit. Columbia).—BISHOP, Auk, xxvii, 1910, 463 (East Haven, Connecticut, March, 1907).—TAVERNER, Auk, xxix, 1912, 397 (Chisholm, Nipissing District, Ontario, breeding; descr. young).

*Scotiaptex nebulosa nebulosa* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 171.—GRINNELL (J.), Pacific Coast Avifauna, no. 8, 1912, 13.

*Strix nebulosa nebulosa* HARTERT, Die Vögel der Paläarkt. Fauna, heft viii (bd. ii, 2), Aug., 1913, 1016.

[*Strix*] *cinerea* GMELIN, Syst. Nat., i, pt. 1, 1788, 291 (Hudson Bay; based on *Sooty Owl* Pennant, Arctic Zool., ii, 232, and *Cinereous Owl* Latham, Synopsis Birds, i, pt. 1, 134).—LATHAM, Index Orn., i, 1790, 58.

*Strix cinerea* VIEILLOT, Ois. Am. Sept., i, 1807, 48; Nouv. Dict. d'Hist. Nat., vii, 1817, 23 (Hudson Bay).—BONAPARTE, Ann. Lyc. N. Y., ii, 1828, 436.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 77, pl. 31.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 128; 2d ed., 1840, 134.—TOWNSEND (J. K.), Journ. Ac. Nat. Sci. Phila., viii, 1837, 151 (n. w. United States).—AUDUBON, Orn. Biog., iv, 1838, 364, pl. 351.—PEABODY, Rep. Orn. Mass., 1839, 274.—THOMPSON, Nat. Hist. Vermont, 1853, 65.—COUES, Check List, 2d ed., 1882, no. 474.

S[*trix*] *cinerea* COUES, Key N. Am. Birds, 2d ed., 1884, 509.

S[*cotiaptex*] *cinerea* SWAINSON, Classif. Birds, i, 1836, 334.

*Scotiaptex cinerea* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 21; Check List, abridged ed., 1889, and 2d ed., 1895, no. 370.—MILLER (J. H.), Auk, vii, 1890, 206 (Watson, Lewis Co., New York, Dec. 17, 1889).—CHURCHILL, Auk, xi, 1891, 313 (Princeton, Massachusetts, Feb. 28, 1891).—LAWRENCE (R. H.), Auk, ix, 1892, 44 (near Ocosta, Grays Harbor, Washington, May).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 345, pl. 12, fig. 5 (egg).—RHODES, Proc. Ac. Nat. Sci. Phila., 1893, 41 (near

- Vernon, Brit. Columbia).—STONE, Birds E. Penn. and N. J., 1894, 90 (Sussex Co., New Jersey; Delaware and Lackawanna counties, Pennsylvania).—DUTCHER, Auk, xii, 1895, 181 (Ogdensburg, St. Lawrence Co., New York).—JOHNSON, Auk, xii, 1895, 301 (Oneida Co., New York, Feb., 1895).—PEABODY, Auk, xiii, 1896, 79 (75 miles s. e. of Huron Lake, Minnesota, Nov. 10, 1895).—LANO, Auk, xv, 1898, 186 (Aitkin Co., Minnesota, winter 1896-'97; measurements and weight).—PORTER, Auk, xvii, 1900, 72 (Humber R., Newfoundland, Aug. 23, 1899).—BOND, Auk, xviii, 1901, 107 (Wells P. O., Wyoming, Apr., 1899).—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 35 (Chico, California; "Sacramento Valley").—RATHBUN (S. F.), Auk, xix, 1902, 134 (Seattle, Washington, Nov. 19 and 21, 1899).—DEANE, Auk, xxiii, 1906, 222 (8 Minnesota records, winter of 1905-'06).—ROBERTS, in Wilcox's Hist. Becker Co., Minnesota, 1907, 174 (occasional in winter).—EDSON, Auk, xxv, 1908, 433 (Bellingham Bay, Washington, 2 specs.).
- [*Scotiaptex*] *cinerea* SHARPE, Hand-list, i, 1899, 294.
- Scotiaptex cinereum* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 98, 99, 100, 101, 102, under cuts; Proc. U. S. Nat. Mus., iii, 1880, 8; Orn. Illinois, i, 1889, 410.
- S[cotiaptex] cinereum* RIDGWAY, Man. N. Am. Birds, 1887, 259.
- [*Ulula*] *cinerea* BONAPARTE, Consp. Av., i, 1850, 53, part.—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 252.
- Ulula cinerea* (?) TACZANOWSKI, Journ. für Orn., 1872, 350 (e. Siberia).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 399.—MERRIAM, Bull. Nutt. Orn. Club, vi, 1881, 232 (Lewis Co., New York, fall; Oneida Co., Apr. 10).—BROWN (N. C.), Proc. Portl. Soc. N. H., ii, 1882 (islands in Casco Bay, Maine).—NELSON, Cruise "Corwin" in 1881 (1883), 75 (shores of Norton Sound, Alaska, rare visitant); Rep. Nat. Hist. Coll. Alaska, 1887, 150 (Sitka northward; habits).—MCLENNAN, Cruise "Corwin," 1884, 117 (Kowak R., n. w. Alaska).—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 243 (Moose Factory, Ontario).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 370.—RALPH and BAGG, Trans. Oneida Hist. Soc., iii, 1886, 120 (Marcy, Oneida Co., New York, Feb., 1875).—SETON, Auk, iii, 1886, 155 (Lake Winnipeg, Manitoba, resident; Big Plain, Sept.; Red R., common).—WOOD (A. H.), Auk, v, 1888, 110 (Steuben Co., New York, Feb. 10, 1887).—MORRIS, Auk, xiv, 1897, 100 (Blandford, w. Massachusetts, March 4, 1896).
- U[lula] cinerea* RIDGWAY, Bull. Ills. State Labr. N. H., no. 4, 1881, 187 (n. Illinois in winter).
- Syrnium cinereum* BONAPARTE, Geog. and Comp. List, 1838, 6.—AUDUBON, Synopsis, 1839, 26; Birds Am., oct. ed., i, 1840, 130, pl. 35.—BREWER, ed. Wilson's Am. Orn., 1840, 687.—DEKAY, Zool. N. Y., ii, 1844, 26, pl. 13, fig. 29.—ABBOTT, Proc. Bost. Soc. N. H., i, 1842, 57 (Massachusetts).—KAUP, Jardine's Contr. Orn., 1852, 121; Trans. Zool. Soc. Lond., iv, 1859, 256.—HOY, Proc. Ac. Nat. Sci. Phila., vi, 1853, 307 (Racine, Wisconsin).—CASSIN, Illustr. Birds Calif., Texas, etc., 1854, 184; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 56.—STRICKLAND, Orn. Syn., i, 1855, 188.—PUTNAM, Proc. Essex Inst., i, 1856, 204 (Massachusetts).—NEWBERRY, Rep. Pacific R. R. Surv., vi, chapt. ii, 1857, 77 (upper Sacramento Valley, Cascade Mts., Des Chutes Basin, and Columbia R.).—BAIRD, Cat. N. Am. Birds, 1859, no. 53.—COOPER, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 156 (near Columbia R., June); Orn. Calif., 1870, 433 (forests near Columbia R.).—WHEATON, Ohio Agric. Rep., 1860, no. 25, (Ohio).—BOARDMAN, Proc. Bost. Soc. N. H., ix, 1862, 123 (Maine).—VERRILL, Proc. Essex Inst., iii, 1862, 143 (Oxford Co., Maine, rare in winter).—ALLEN, Proc. Essex Inst., iv, 1864, 81 (Massachusetts).—MCLWRAITH, Proc. Essex Inst., v, 1866, 82 (Hamilton, Ontario,

- winter).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 59.—TURNBULL, Birds E. Penn. and N. J., 1869, 40 (New Jersey, winter).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 273 (Sitka, near Nulato, etc., Alaska; food).—TRIPPE, Proc. Bost. Soc. N. H., xv, 1873, 233 (Iowa, winter).—HATCH, Bull. Minn. Ac. Sci., i, 1874, 52 (Minnesota, common in winter).—KIRTLAND, Proc. Cleveland Ac. Sci., 1874, 257 (n. Ohio in winter).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 252 (Brit. Columbia, etc.).—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 133 (mts. near Ft. Lapwai, Idaho, breeding).—DREW, Bull. Nutt. Orn. Club, vi, 1881, 141 (San Juan Co., Colorado, Feb.).—ALLEN, Bull. Nutt. Orn. Club, viii, 1883, 123 (Agawam, Massachusetts, Feb. 21, 1882).—JENCKS, Bull. Nutt. Orn. Club, viii, 1883, 183 (Wickford, Rhode Island, March 25, 1883).
- [*Syrnium*] *cinereum* GRAY, Hand-list, i, 1869, 48, no. 504.
- Syrnium cinereum* RIDGWAY, Ann. Lyc. N. Y., x, 1874, 379 (n. Illinois in winter).
- [*Syrnium cinereum*] var. *cinereum* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 29.
- Surnium cinereum* KENNICOTT, Trans. Ills. Agric. Assoc., i, 1855, 581 (n. Illinois).
- Syrnium (Scotiaptex) cinereum* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 30.
- [*Syrnium*] *lapponicum* var. *cinereum* COUES, Key N. Am. Birds, 1872, 204.
- Syrnium lapponicum* . . . var. *cinereum* COUES, Check List, 1873, no. 322.
- [*Syrnium cinereum*] a. *cinereum* COUES, Birds Northwest, 1874, 307.
- Syrnium lapponicum cinereum* LAWRENCE (R.), Bull. Nutt. Orn. Club, v, 1880, 122 (Adirondack Mts., New York, March).
- Strix fuliginosa* SHAW, Gen. Zool., vii, 1809, 244 (based on *Sooty Owl* Pennant, Arctic Zool., ii, 232).
- Syrnium lapponicum* (not *Strix lapponica* Thunberg) RIDGWAY, Bull. Nutt. Orn. Club, iii, 1878, 37 (Yukon delta, Alaska).
- Strix lapponica* ALLEN, Bull. Nutt. Orn. Club, v, 1880, 91 (St. Michaels, Alaska).
- Uhu cinerea lapponica* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 191; Nom. N. Am. Birds, 1881, no. 399a.—NELSON, Cruise of "Corwin" in 1881 (1883), 75 (St. Michaels, Alaska); Rep. Nat. Hist. Coll. Alaska, 1887, 150 (Yukon delta).—TURNER, Contr. Nat. Hist. Alaska, 1886, 162 (Yukon delta; not Plate 5, which=true *lapponica*!).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 370a (excl. syn. part).
- Scotiaptex cinereum lapponicum* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 8, part.
- Scotiaptex cinereum lapponicum* RIDGWAY, Man. N. Am. Birds, 1887, 260, part.
- Scotiaptex cinerea lapponica* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 21; Abridged Check List, 1889, and Check List, 2d ed., 1895, no. 370a; Auk, xix, 1902, 319.—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 346.
- Scotiaptex nebulosa lapponica* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 340; Check List, 3d ed., 1910, 171.

### Genus STRIX Linnæus.

- Strix* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 92. (Type, by subsequent designation, *Strix aluco* Linnæus or *S. stridula* Linnæus. See Newton, Ibis, 1876, 94-105; Allen, Auk, xxv, 1908, 290.)
- Syrnium* SAVIGNY, Descr. de l'Égypte, Ois., i, livr. 1, 1809, 111, 298. (Type, *Strix ululans* Savigny=*S. aluco* Linnæus.)
- Aluco* (not of Fleming, 1828) KAUP, Naturl. Syst., 1829, 190. (Type, *Strix aluco* Linnæus.)



- (?) *Bulaca* HODGSON, *Asiat. Research.*, xix, 1836, 169. (Type, *B. newarensis* Hodgson.)
- (?) *Nyctimene*<sup>a</sup> MORRIS, in *N. Wood's Naturalist*, ii, no. 9, June, 1837, 123. (Types, *N. flammula* Morris=*Strix aluco* Linnæus? and *N. stridula* Morris=?)
- (?) *Myrtha* BONAPARTE, *Rev. et Mag. de Zool.*, vi (2), 1854, 541. (Type, *Strix sinensis* Latham.)

Large or medium-sized Bubonidæ (wing, in American species, about 305–380 mm.) without ear-tufts, the external ear-openings very large, reniform, conspicuously asymmetrical, and furnished with a large anterior operculum or dermal flap; symmetrical cranium; relatively large eyes (the iris always dark brown), and incompletely feathered toes.

Bill moderately stout; top of cere much shorter than chord of culmen, nearly straight or faintly arched. Nostril oval or broadly elliptical, moderately large, obliquely vertical, opening in anterior edge of cere, the latter somewhat inflated laterally. External ear-opening occupying middle half or more of postocular region of head, the ear-orifice opening below a median transverse ligamentous "bridge," the anterior margin produced into a very large operculum or dermal flap, the opposite ears conspicuously asymmetrical in all their parts, and the right ear distinctly larger than the left. Wing rather large, with longest primaries decidedly longer than distal secondaries; sixth and seventh, or sixth, seventh, and eighth,<sup>b</sup> primaries longest, the tenth (apparent outermost) not longer than the second,<sup>c</sup> sometimes shorter than the first;<sup>d</sup> five outer primaries with inner webs sinuated. Tail less to more than two-thirds as long as wing, slightly to distinctly rounded. Tarsus decidedly longer than middle toe with claw, completely clothed with dense, soft feathers, the upper side of toes (except terminal phalanx) usually also feathered but sometimes naked except on outer side of basal phalanx of middle toe. Head relatively large, without trace of ear-tufts.

*Coloration* (of American species).—Above brown, barred or spotted with buffy or whitish; face dull grayish or dingy whitish, usually with narrow concentric lines of darker; primaries spotted with pale brown and whitish and tail crossed by about 6–8 narrow bands of the same; under parts whitish (buffy or ochraceous beneath surface), barred (anteriorly) and striped (posteriorly), or spotted only, with brown; iris blackish brown or brownish black; bill yellowish.

*Range*.—Palæarctic and Nearctic Regions; in America, south to highlands of Guatemala. (Numerous species.)<sup>e</sup>

<sup>a</sup> Νύξ (νυκτός), night; μένω, I remain, abide. (Richmond.)

<sup>b</sup> Fourth and fifth, or third, fourth, and fifth, from outside.

<sup>c</sup> Ninth from outside.

<sup>d</sup> Tenth from outside.

<sup>e</sup> In Sharpe's "Hand-list" (i, 1899, 293–294) thirty-one species are given under "*Syrnium*" (= *Strix*); but some of these are undoubtedly not congeneric.

KEY TO THE SPECIES AND SUBSPECIES OF *STRIX*.

- a.* Posterior half (or more) of under parts longitudinally striped, without spots or bars; upper parts barred.
- b.* Larger (wing 315–355 mm.); coloration much less fulvous, the lighter markings mostly white or buffy white. (*Strix varia*.)
- c.* Basal portion of toes densely feathered, the middle portion scantily feathered or bristled.
- d.* Coloration lighter, the stripes on under parts distinctly brown; bars on upper parts less numerous, more buffy or ochraceous; smaller, with relatively smaller bill and feet (wing averaging 332.8 in male, 338.3 in female; culmen, from cere, averaging 25.1 in male, 25.3 in female). (Transition and Upper Austral zones of eastern North America.)
- Strix varia varia* (p. 641).**
- dd.* Coloration darker, the stripes on under parts black to blackish brown; bars on upper parts more numerous, whiter; larger, with relatively larger bill and feet (wing averaging 359 in male, 359.7 in female; culmen, from cere, averaging 26.3 in male, 26.8 in female). (Mountains of Mexico.).....***Strix varia sartorii* (p. 646).**
- cc.* Toes wholly naked, except a strip on outer side of middle toe.
- d.* Larger, with relatively larger bill and feet, as in *S. v. sartorii*, but lighter colored than *S. v. varia*. (South-central Texas.)
- Strix varia albogilva* (p. 646).**
- dd.* Smaller, with smaller bill and feet, as in *S. v. varia*, and identical with the latter in coloration. (Humid portions of Lower Austral Zone in eastern United States.).....***Strix varia alleni* (p. 644).**
- bb.* Smaller (wing 300–325 mm.); coloration much more fulvescent, the lighter markings mostly ochraceous or deep buff. (Toes naked.) (Highlands of Guatemala.).....***Strix fulvescens* (p. 647).**
- aa.* Posterior under parts spotted, like anterior portions; upper parts spotted. (*Strix occidentalis*.)
- b.* Darker.
- c.* Darkest, with lighter markings more reduced in size; legs and feet more heavily mottled. (Northwest coast, from northern California to British Columbia.)
- Strix occidentalis caurina* (p. 650).**
- cc.* Less dark, with lighter markings larger; legs and feet less heavily mottled.
- d.* Under parts with lighter markings more buffy. (California, except northern coast district.).....***Strix occidentalis occidentalis* (p. 648).**
- dd.* Under parts with lighter markings more whitish. (Mexico.)
- Strix occidentalis lucida* (p. 652).**
- bb.* Paler. (Arizona; Colorado?).....***Strix occidentalis huachucae* (p. 651).<sup>a</sup>**

**STRIX VARIA VARIA (Barton).****BARRED OWL.**

*Adults (sexes alike).*—Head, neck, chest, back, scapulars, and rump broadly and regularly barred with pale buff or buffy white and deep brown (bister or warm sepia), the latter color always terminal, the brown bars rather broader than the paler ones on upper parts, but on the neck and chest rather narrower; breast also barred with

<sup>a</sup> Owing to insufficiency of the material examined, I am not able to give a very satisfactory key to the forms of *S. occidentalis*.

brown and whitish, but the brown bars connected by a mesial streak, thus separating the whitish into pairs of spots on opposite webs; each feather of abdomen, sides, and flanks with a broad median longitudinal stripe of darker brown, the under tail-coverts with similar but rather narrower stripes; anal region immaculate buffy or buffy white; legs with numerous but rather faint transverse spots or bars of brown; general color of wings and tail brown; middle and greater coverts with roundish transverse spots of white on outer webs, the lesser coverts plain deep brown; secondaries crossed by about six bands of pale grayish brown passing into paler on edges, the terminal band passing into whitish on margin; primary coverts with four bands of darker buffy brown or ochraceous-brown; primaries with transverse series of quadrate spots of pale brown (growing deeper brown on proximal quills) on outer webs, the last terminal (there are about eight spots on longest primary); tail crossed by six or seven sharply defined bands of pale brown, the last terminal; face grayish white or pale brownish gray, with concentric semicircular bars of brown; "eyebrows" (superciliary region) and lores dull grayish white or pale grayish with black shafts; a narrow crescent of black against anterior angle of eye; facial circle a mixture of blackish brown and buffy white bars, the former predominating along anterior edge, the latter more distinct along posterior edge and predominating across foreneck where the brown forms disconnected transverse spots; bill dull buff-yellowish; iris very dark brown or brownish black, the pupil appearing blue by contrast; naked portion of toes dull yellowish or yellowish gray, the large scutella more decidedly yellow, the soles deep yellow; claws dark horn color, becoming blackish terminally.

*Young*.—Head, neck, and entire under parts broadly barred with rather light brown and pale buffy and whitish, the brown and pale bars about equal in width; back, scapulars, and wing-coverts similarly barred, but the bars broader, the brown ones of a deeper shade, and each feather broadly tipped with white; remiges and rectrices (if developed) as in adults.

*Adult male*.—Length (skins),<sup>a</sup> 450–495 (471); wing, 320–340 (332.8); tail, 215–230 (225.4); culmen, from cere, 23.5–27 (25.1).<sup>b</sup>

*Adult female*.—Length (skins),<sup>c</sup> 470–505 (489); wing, 330–352 (338.3); tail, 224–257 (230.3); culmen, from cere, 25.5–30 (25.8).<sup>d</sup>

Middle eastern North America, in Transition and Upper Austral zones; north to Newfoundland, southern Quebec (Point de Monts),

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<sup>a</sup> In life, length about 501–533 mm., extent of wings 1143–1219 mm.; weight about 1 $\frac{1}{4}$ –1 $\frac{1}{2}$  lbs.

<sup>b</sup> Eleven specimens.

<sup>c</sup> In life, length about 530–560 mm., extent of wings 1193–1220+mm.

<sup>d</sup> Seven specimens.



northern Ontario (Parry Sound), southern Keewatin, Manitoba (Winnipeg; Red River Valley; Rat Portage; Portage la Prairie), and Saskatchewan (Chemawaywin); west to eastern Montana (Gallatin County; Yellowstone River; Musselshell River), eastern Wyoming (Bear Lodge, Crook County), and eastern Colorado (Boulder; Holyoke, breeding); south to or somewhat beyond southern limit of the Upper Austral Zone, in Virginia, western North Carolina, north-western South Carolina, northern Georgia, Tennessee, Kentucky, southern Illinois, Missouri, and northern Arkansas, occasionally (as a straggler or migrant) to Louisiana.

*Strix varius* BARTON, Fragm. Nat. Hist. Penn., 1799, 11 (Pennsylvania).

*Strix varia* VIEILLOT, Nouv. Dict. d'Hist. Nat., ix, 1817, 601.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 371.—HENDERSON, Univ. Colo. Stud. Zool., vi, 1909, 230 (near Boulder, Colorado).—COOKE, Auk, xxvi, 1909, 412 (Bear Lodge, Crook Co., Wyoming, March, 1905).—SAUNDERS, Auk, xxviii, 1911, 37 (Sour Dough Canon, Gallatin Co., Montana, Aug. 5, 1909).

*Strix varia varia* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 170.

*Syrnium varium* PREBLE, North Am. Fauna, no. 22, Oct., 1902, 109.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 340.—CURRIER, Auk, xxi, 1904, 35 (Leach Lake, Minnesota, breeding).—FLEMING, Auk, xxiv, 1907, 74 (Toronto, Ontario, winter resident).—ALLEN (F. H.), Auk, xxv, 1908, 59 (Londonderry, s. Vermont).—SETON, Auk, xxv, 1908, 452 (Winnipeg, Manitoba, 3 specs.).—REAGAN, Auk, xxv, 1908, 464 (Rosebud Reservation, South Dakota, common).

*Strix nebulosa* (not of Forster, 1772) VIEILLOT, Ois. Am. Sept., i, 1807, 45, pl. 17; Nouv. Dict. d'Hist. Nat., vii, 1817, 32 (Hudson Bay; United States in winter).—WILSON, Am. Orn., iv, 1811, 61, pl. 33, fig. 2.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 38.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 81.—AUDUBON, Orn. Biog., i, 1831, 242, pl. 46; v, 1839, 386.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 133; 2d ed., 1840, 143.—GOULD, Birds, Europe, i, 1832, pl. 46 and text.—WERNER, Atlas Ois. d'Europe, i, 1848, pl. 49.—RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 7, 191; Nom. N. Am. Birds, 1881, no. 397.—COUES, Check List, 2d ed., 1882, no. 476.—BATCHELDER, Bull. Nutt. Orn. Club, vii, 1882, 150 (Houlton, Maine; Fairfield, New Brunswick).—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 237 (Point de Monts, Quebec).

*S[trix] nebulosa* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 354 (crit.); Obs. Wilson's Am. Orn., 1826, [15].—COUES, Key N. Am. Birds, 2d ed., 1884, 509.

[*Strix*] *nebulosa* BOIE, Isis, 1828, 315.

*Ulua nebulosa* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 60.—LESSON, Man. d'Orn., i, 1824, 113; Traité d'Orn., 1831, 108.—CUVIER, Règne Anim., ed. 2, i, 1829, 342.—BONAPARTE, Geog. and Comp. List, 1838, 7.—SCHLEGEL, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 11.

[*Ulua*] *nebulosa* BONAPARTE, Consp. Av., i, 1850, 53.

*U[lula] nebulosa* KEYSERLING and BLASIUS, Wirb. Europ., 1840, pp. xxxi, 142.

*Ullua nebulosa* SCHLEGEL, Mus. Pays-Bas, ii, pt. 36 (Revue), 1873, 18.

*Syrnium nebulosum* AUDUBON, Synopsis, 1839, 27; Birds Am., oct. ed., i, 1840, 132, pl. 36.—KAUP, Jardine's Contr. Orn., 1852, 256; Trans. Zool. Soc. Lond., iv, 1859, 121.—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Col. R.,

- 1853, 63 (Indian Terr.).—CASSIN, Cat. Strig. Mus. Ac. Nat. Sci. Phila., 1849, 4; Illustr. Birds Calif., Tex., etc., 1854, 184 (Canada; Minnesota; Penn.); in Baird, Rep. Pacific R. R. Surv., ix, 1858, 56.—STRICKLAND, Orn. Syn., i, 1855, 189.—BREWER, North Am. Ool., 1857, 72.—BAIRD, Cat. N. Am. Birds, 1859, no. 54; in Cooper's Orn. Calif., 1870, 431.—WILLIS, An. Rep. Smithson. Inst. for 1858 (1859), 281 (Nova Scotia).—MARTENS, Journ. für Orn., 1859, 212 (Bermudas).—BLAKISTON, Ibis, 1863, 50.—McILWRAITH, Proc. Essex Inst., v, 1866, 82 (Hamilton, Ontario).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity of New York City).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 59.—TRIPPE, Proc. Essex Inst., vi, 1871, 114 (Minnesota).—SNOW, Birds Kansas, 1872, 2 (common).—COUES, Check List, 1873, no. 323.—ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 64 (Ft. Rice, North Dakota; Yellowstone and Musselshell rivers, Montana).—RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 34; Orn. Illinois, i, 1889, 409, part.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 257.—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 215 (Bermudas, 1 spec., April 2, 1851).—SETON, Auk, iii, 1886, 155 (near Winnipeg and Red River Valley, Manitoba, common summer resident).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 368.—RODDY, Auk, v, 1888, 248 (feeding habits).—LANTZ, Auk, vii, 1890, 286 (Kansas; habits).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 541 (Winnipeg, Red River Valley, Rat Portage, Portage la Prairie, etc., Manitoba).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 335, pl. 12, fig. 4 (egg).—NUTTING, Bull. Lab. N. H. State Univ. Iowa, ii, 1893, 270 (Chemawawin, lower Saskatchewan).—BEYER, Proc. La. Soc. Nat. for 1897-99 (1900), 100 (Louisiana in winter).—COOKE, Bull. 56, Col. Agric. Exp. Sta., 1900, 205 (near Holyoke, n. e. Colorado, breeding).—AIKEN, Auk, xvii, 1900, 298 (near Holyoke, Colorado, 1 pair breeding).—FLEMING, Auk, xviii, 1901, 38 (Parry Sound, etc., n. Ontario).—ROBERTS, in Wilcox's Hist. Becker Co. Minnesota, 1907, 174 (frequent).
- Syrnium nebulosum* MAXIMILIAN, Journ. für Orn., 1858, 27 (Wabash and Ohio, Indiana; and on Mississippi).—VERRILL, Proc. Essex Inst., iii, 1862, 143 (Oxford Co., Maine, resident).—RIDGWAY, Ann. Lyc. N. Y., x, 1874, 379 (Illinois); Man. N. Am. Birds, 1887, 259.
- [*Syrnium nebulosum* GRAY, Hand-list, i, 1869, 48, no. 505.—COUES, Key N. Am. Birds, 1872, 204, part.—SHARPE, Hand-list, i, 1899, 293.
- [*Syrnium nebulosum*] var. *nebulosum* RIDGWAY, Bull. Essex Inst., v, Dec., 1873, 200, in text; in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 29.
- [*Syrnium nebulosum*] a. *nebulosum* COUES, Birds Northwest, 1874, 308.
- Surnium nebulosum* SCOTT, Proc. Bost. Soc. N. H., xv, 1873, 226.
- (?) *Strix aluco* (not of Linnæus) NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 135; 2d ed., 1840, 137 (Newfoundland).

### STRIX VARIA ALLENI (Ridgway).

#### FLORIDA BARRED OWL.

Similar in coloration to *S. v. varia* but toes wholly naked, except a narrow strip on outer side of middle toe.<sup>a</sup>

*Adult male*.—Length (skins), 410-492 (460); wing, 315-340 (326.5); tail, 205-231 (220.4); culmen, from cere, 23-28 (24.8).<sup>b</sup>

<sup>a</sup> After carefully comparing a large series of specimens I am unable to find any average color difference between this form and *S. v. varia*.

<sup>b</sup> Twelve specimens.

*Adult female*.—Length (skins), 445–500 (478); wing, 330–360 (347.1); tail, 215–245 (232.3); culmen, from cere, 25–28 (24.1).<sup>a</sup>

Humid division of Lower Austral Zone of eastern United States; north to South Carolina on the Atlantic coast, to Arkansas (Wilmot; Delight; Van Buren; Stuttgart) and northeastern Texas (Cook County) in the interior;<sup>b</sup> west to eastern Texas (Shelby, Hardin, Montgomery, Harris, Galveston, and Fort Bend counties).

*Ulula nebulosa* (not *Strix nebulosa* Forster) WAILES, Rep. Geol. Miss., 1854, 320 (Mississippi).

(?) [*Ulula*] *nebulosa* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 252 (Georgia; South Carolina).

*Syrnium nebulosum* TAYLOR, Ibis, 1862, 128 (Florida).—MAYNARD, Birds E. N. Am., 1881, 256, part (Florida specimens).—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 340 (e. Florida).—COUES, Check List, 1873, no. 323, part.—NEHRING, Bull. Nutt. Orn. Club, vii, 1882, 172 (Montgomery, Galveston, and Fort Bend counties, Texas).

[*Syrnium*] *nebulosum* COUES, Key N. Am. Birds, 1872, 204, part.

*Strix nebulosa alleni* RIDGWAY, Proc. U. S. Nat. Mus., iii, sig. 1, March 27, 1880, 8 (Clearwater, s. w. Florida; coll. U. S. Nat. Mus.), 191; Nom. N. Am. Birds, 1881, no. 397a.—REICHENOW and SCHALOW, Journ. für Orn., 1881, 79 (reprint of original descr.).—SCOTT, Bull. Nutt. Orn. Club, vi, 1881, 18 (Tanasofenskee Lake, Florida).—COUES, Check List, 2d ed., 1882, no. 477.

*S[trix] n[ebulosa] alleni* COUES, Key N. Am. Birds, 2d ed., 1884, 510.

*Syrnium nebulosum alleni* RIDGWAY, Proc. U. S. Nat. Mus., viii, Sept. 2, 1885, 355; Auk, viii, 1891, 240 (near Charleston, South Carolina).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 368a.—RAGSDALE, Auk, iii, 1886, 281 (Cook Co., n. e. Texas).—CHAPMAN, Auk, v, 1888, 271 (Gainesville, Florida).—ALLEN, Auk, v, 1888, 324 (Mandeville, Louisiana).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 339, part.—SCOTT, Auk, vi, 1899, 248 (Tarpon Springs, Sanibel I., and Marco, w. Florida).—COOMBS, Auk, ix, 1892, 205 (Bayou Teche, Louisiana).—WAYNE, Auk, xii, 1895, 364 (Aucilla R., n. w. Florida).—BEYER, Proc. La. Soc. Nat. for 1897-'99 (1900), 100 (Louisiana).—BEYER, ALLISON, and KOPMAN, Auk, xxv, 1908, 443 (Louisiana).

*S[yrnium] nebulosum alleni* RIDGWAY, Man. N. Am. Birds, 1887, 259.

*Syrnium varium alleni* PREBLE, North Am. Fauna, no. 22, Oct., 1902, 109.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 340.—WILLIAMS (R. W.), Auk, xxi, 1904, 455 (Leon Co., Florida).—KOPMAN, Auk, xxii, 1905, 141 (Jefferson Parish, Louisiana).—HOWELL (A. H.), Proc. Biol. Soc. Wash., xxi, 1908, 120 (Lecompte and Eldorado, n. Louisiana); Bull. 38, U. S. Biol. Surv., 1911, 42 (Wilmot, Delight, Van Buren, Stuttgart, etc., Arkansas).

*Strix varia alleni* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 170.

*Stryx varia alleni* FISHER (W. C.), Wilson Bull., xxii, 1910, 45 (Lake Wimlico, n. w. Florida).

*Syrnium alleni* GURNEY, Cat. Birds of Prey, 1894, 40.

[*Syrnium*] *alleni* SHARPE, Hand-list, i, 1899, 293.

*Syrnium varium* (not *Strix varius* Barton) ALLISON, Auk, xxi, 1904, 477 (West Baton Rouge Parish, Louisiana).—STOCKARD, Auk, xxi, 1905, 153 (Mississippi; nesting habits, etc.).

<sup>a</sup> Seven specimens.

<sup>b</sup> Owing to lack of material from intermediate territory, it is not possible at present to state with greater precision the northern limits to the range of this form.



**STRIX VARIA ALBOGILVA** Bangs.**TEXAS BARRED OWL.**

With naked toes, like *S. v. alleni*, but coloration much paler, the upper parts much more conspicuously and generally barred (the bars nearly pure white), tail-bands broader, whiter, and more sharply defined, stripes on under parts narrower, lighter brown, legs much paler buffy or buffy white and much less distinctly mottled (sometimes immaculate), and buff of under parts decidedly paler; bill and feet much larger.

*Adult male*.—Length (skin), 515; wing, 355; tail, 230; culmen, from cere, 27.5.<sup>a</sup>

*Adult female*.—Length (skins), 445–540 (504); wing, 330–353 (341); tail, 210–254 (230.5); culmen, from cere, 25–28 (26.6).<sup>b</sup>

South-central Texas (mesquite area), in Nueces, Brazoria, Lee, Refugio, Bexar, Concho (?), and Tom Green (?) counties.

*Syrnium nebulosum* (not *Strix nebulosa* Forster) DRESSER, Ibis, 1865, 330 (s. Texas).—(?) LLOYD, Auk, iv, 1887, 189 (Tom Green and Concho counties, w. centr. Texas).—BECKHAM, Proc. U. S. Nat. Mus., x, 1888, 662 (Corpus Christi and San Antonio, Texas).—ATTWATER, Auk, ix, 1892, 234 (San Antonio, Texas).—ROADS, Proc. Ac. Nat. Sci. Phila., 1892, 106 (Corpus Christi, Texas).

*Syrnium nebulosum alleni* (not of Ridgway) BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 339, part (s. e. and centr. Texas).

*Syrnium nebulosum helveolum* (not *Strix helvola* Lichtenstein, 1842) BANGS, Proc. New Engl. Zool. Club, i, March 31, 1899, 31 (Corpus Christi, Texas; coll. E. A. and O. Bangs).—CARROLL, Auk, xvii, 1900, 343 (Refugio Co., Texas, resident).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xviii, 1901, 299.

*Syrnium varium helveolum* PREBLE, North Am. Fauna, no. 22, Oct., 1902, 109.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 340.

[*Syrnium*] *helveolum* SHARPE, Hand-list, i, 1899, 293.

*Strix varia albogilva* BANGS, Auk, xxv, July, 1908, 316, in text (new name for *Syrnium nebulosum helveolum* Bangs, preoccupied).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 371; Check List, 3rd ed., 1910, 170.

**STRIX VARIA SARTORII** (Ridgway).**MEXICAN BARRED OWL.**

Agreeing with *S. v. varia* in feathered toes; with *S. v. albogilva* in large bill and feet, more numerous and whiter bars on upper parts, and whitish legs and feet; but coloration much darker than in any other form, the brown of upper parts more sooty, stripes on posterior under parts broader and much darker (blackish brown to black), and dusky bars on face (auricular and postocular regions) averaging less distinct (sometimes obsolete).

*Adult male*.—Length (skins), 466–475 (471); wing, 342–380 (359.2); tail, 220–238 (228.5); culmen, from cere, 25–28 (26.3).<sup>b</sup>

<sup>a</sup> One specimen.

<sup>b</sup> Four specimens.

*Adult female*.—Length (skins), 465–510 (486); wing, 350–365 (359.7); tail, 235–252 (242.6); culmen, from cere, 24.5–28.5 (26.8).<sup>a</sup>

Higher mountains of central and southern Mexico, in States of Vera Cruz (Miradór), Puebla (pine zone of Mount Orizaba), Mexico ("Valley of Mexico"), Oaxaca (La Parada; Cerro San Felipe), Guerrero (Omiteme), Michoacán (Mount Tancítaro), Jalisco (Las Canoas; Volcán de Nieve; Cerro Viejo Jojolitán; Sierra de Cuyutlán; Los Masos; Colónia Brizuela, near Autlán), and Durango (Ciudad Durango).

*Syrnium nebulosum* (not *Strix nebulosa* Forster) SCLATER, Proc. Zool. Soc. Lond., 1858, 295 (La Parada, Oaxaca).

*Syrnium nebulosum*, var. *sartorii* RIDGWAY, Bull. Essex Inst., v, Dec., 1873, 200 (Mirador, Vera Cruz, e. Mexico; coll. U. S. Nat. Mus.); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 29, footnote.

[*Syrnium nebulosum*] b. *sartorii* COUES, Birds Northwest, 1874, 309 (synonymy).

*Syrnium sartorii* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 258, footnote.—GURNEY, Cat. Birds of Prey, 1894, 40.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 9 (Ciudad Durango; Cerro Viejo Jojolitán, Sierra de Cuyutlán, and Colonia Brizuela near Autlán, Jalisco; Monte Alto; Valley of Mexico; La Parada, Oaxaca; Mirador, Vera Cruz).

[*Syrnium*] *sartorii* SHARPE, Hand-list, i, 1899, 293.

*Syrnium nebulosum sartorii* RIDGWAY, Man. N. Am. Birds, 1887, 258.

*Syrnium nebulosum sartorii* COX, Auk, xii, 1895, 357 (pine zone of Mt. Orizaba, Puebla).

### STRIX FULVESCENS (Sclater and Salvin).

#### GUATEMALAN BARRED OWL.

Resembling *S. varia* and subspecies in pattern of coloration (the toes naked as in *S. v. alleni* and *S. v. albogilva*), but decidedly smaller and coloration much more fulvescent, the lighter markings mostly light ochraceous or deep buff instead of whitish.

*Adults (sexes alike)*.—Prevailing color of upper parts rich dark warm brown (dark burnt umber or dark vandyke brown); pileum, hindneck, and upper back very broadly barred with light ochraceous to deep buff, the first two having two bars on each feather, about equal in width to the dark brown interspaces, the last with only one ochraceous bar, this much broader than the dark brown terminal bar; scapulars, lower back, and rump with less regular, as well as mostly smaller, bars or transverse spots of ochraceous, those on posterior portion of scapulars paler (sometimes whitish), in form of transverse ovoid spots; wing-coverts with small and indistinct bars or spots of pale brown and ochraceous, the outer webs of distal greater and middle coverts with large roundish subterminal spots of white; secondaries crossed by five or six rather broad bands (two of them concealed by greater coverts) of light brown more or less mottled with darker and usually becoming whitish toward edge; outer webs of primaries with large spots, these light brown on proximal quills,

<sup>a</sup> Seven specimens.

mostly whitish on distal ones; tail crossed by four or five very distinct narrow bands of light ochraceous-buff, or buffy white, these interrupted only by the dark brown shafts; face, including "eyebrows" (superciliary region), dull brownish white, the postocular, auricular, and suborbital regions concentrically barred with dark brown, the bars broader and darker posteriorly, narrower and more faint anteriorly, the feathers of lores and superciliary region with black shafts; feathers immediately surrounding eyes dusky; facial rim or border very dark brown (dark seal brown), in part (mostly along posterior edge and across throat) spotted with buff; ground color of under parts light ochraceous to buff; foreneck, chest, and breast broadly barred with dark brown (like general color of upper parts), the bars much wider on lower breast; sides, flanks, and abdomen (except along median line) broadly striped with deep brown (vandyke brown to mars brown); legs more or less barred or mottled with brown; under tail-coverts mostly immaculate, but usually the longer feathers with a narrow mesial subterminal streak of brown; bill light yellow; iris dark brown; toes light yellowish brown (in dried skins).

*Adult female*.—Length (skin), 417; wing, 300–325 (312.5); tail, 192–200 (196); culmen, from cere, 22.5–24.5 (23.5).<sup>a</sup>

Highlands of Guatemala (Volcán de Fuego; Volcán de Tacana; Texpám; Cajabón; Dueñas; near Antigua) and Chiapas (Teopisca).

*Syrnium nebulosum* (not *Strix nebulosa* Forster) SCLATER and SALVIN, Ibis, 1859, 221 (Cajabon, Guatemala).

*Syrnium fulvescens* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 58 (Guatemala; coll. Salvin and Godman and Brit. Mus.).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 258.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 9, pl. 61 (near Antigua, Cajabon, Dueñas, Volcan de Fuego, and Volcan de Tacana, Guatemala).

[*Syrnium*] *fulvescens* GRAY, Hand-list, i, 1869, 48, no. 506.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116.—SHARPE, Hand-list, i, 1899, 293.

[*Syrnium nebulosum*] var. *fulvescens* RIDGWAY, Bull. Essex Inst., v, Dec., 1873, 200, in text.

*Syrnium nebulosum*, var. *fulvescens* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 29, footnote.

[*Syrnium nebulosum*] c. *fulvescens* COUES, Birds Northwest, 1874, 309 (synonymy).

*Uthula fulvescens* SCHLEGEL, Mus. Pays-Bas, ii, no. 36 (Revue), 1873, 19.

### STRIX OCCIDENTALIS OCCIDENTALIS (Xantus).

#### SPOTTED OWL

Somewhat like *S. varia* but smaller, spotted, instead of barred, above, and posterior under parts spotted instead of striped.

*Adults (sexes alike)*.—Upper parts brown (nearest warm sepia), irregularly spotted with white, the spots larger and more transverse

<sup>a</sup> Two specimens. No specimens with sex determined as male are in the series examined. Five specimens of unknown sex measure as follows: Length (skins), 410–485 (457); wing, 300–310 (307); tail, 188–210 (202.8); culmen, from cere, 22–24 (23).



on outer webs of exterior scapulars and distal larger wing-coverts; secondaries crossed by six or seven bands of lighter brown, more or less mottled with darker and (some of them at least) passing into white toward edge or along posterior margin; outer webs of primaries with transverse, quadrate spots of lighter brown, those on distal portion of longer quills partly white; tail crossed by narrow bands of lighter brown (these becoming less distinct or more broken on basal portion), these light-brown bands more or less intermixed with white, especially toward edge and on distal portion of tail; "eyebrow" (superciliary region) and lores grayish white, the former with white, the latter with black, shafts; postocular and auricular regions pale brown, concentrically barred, more or less distinctly, with darker brown; feathers immediately in front of and above eye uniform dark sooty brown; facial rim or border mostly uniform dark brown, followed immediately, in middle portion, by a narrow area of small brown and white spots; middle of throat pale brown barred or striped with dark brown, the lower portion immaculate dull white; rest of under parts mixed buff and white, the latter in form of large, more or less rounded spots on opposite webs of the feather, and broadly barred with brown, the brown bars connected by a more or less broad median space on each feather, those on under tail-coverts, however, separated, or else connected by a very narrow shaft-streak; legs pale buff, more or less thickly spotted or mottled with brown.

*Young*.—Remiges and rectrices as in adults; rest of plumage pale brownish buff, broadly barred with light brown (except on head and legs), the bars widest and most distinct on scapulars, which are tipped with white; head (except orbital region and lores) pale brownish buff, the feathers dark brown basally; legs immaculate pale buff or dull buffy white.

*Adult male*.—Length (skins), 425–450 (442); wing, 310–326 (320.5); tail, 210–220 (215.8); culmen, from cere, 21–22 (21.3).<sup>a</sup>

*Adult female*.—Length (skin), 470; wing, 328; tail, 225; culmen, from cere, 22.5.<sup>b</sup>

<sup>a</sup> Six specimens.		<sup>b</sup> One specimen (from near Pasadena).		
Locality.		Wing.	Tail.	Culmen from ceres.
MALES.				
Six adult males of <i>S. o. occidentalis</i> .....		320.5	215.8	21.3
One adult male of <i>S. o. caurina</i> .....		325	220	23.5
Two adult males of <i>S. o. huachucae</i> .....		316.5	205	20.7
FEMALES.				
One adult female of <i>S. o. occidentalis</i> .....		328	225	22.5
Four adult females of <i>S. o. caurina</i> .....		319	213.2	22.9
One adult female of <i>S. o. huachucae</i> .....		317	225	19.5
Two adult females of <i>S. o. lucida</i> .....		324	221	22.7

Mountains of southern California and northern Lower California; north to Kern, Ventura, and Los Angeles counties, south to San Pedro Martir Mountains (at 3,000–4,500 feet).

*Syrnium nebulosum* (not *Strix nebulosa* Forster) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 921 (Ft. Tejon, California).

*Syrnium occidentale* XANTUS, Proc. Ac. Nat. Sci. Phila., xi, July, 1859, 190, 193 (Ft. Tejon, California; coll. U. S. Nat. Mus.).—BAIRD, Birds N. Am., 1860, 50, atlas, pl. 66.—COOPER, Orn. Calif., 1870, 430 (Ft. Tejon).—RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 38.—COUES, Check List, 1873, no. 324; Birds Northwest, 1874, 309, footnote.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 260, part (in synonymy).—RIDGWAY, Nom. N. Am. Birds, 1881, no. 398, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 369, part.—BRYANT, Proc. Calif. Ac. Sci., ser. 2, 1889, 284 (San Pedro Martir Mts., Lower California, 3,000 ft.).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 343, part.—STEPHENS, Auk, ix, 1892, 392 (Mt. Paloma, San Diego Co., California, 5,000 ft.; habits, notes, etc.).—ANTHONY, Zoe, iv, 1893, 235 (San Pedro Martir Mts., 4,500 ft.).—THURBER, Auk, xiii, 1896, 265 (Little Tejuanga Canyon, California, June; Banning, Sept.; near Pasadena, 5 specs.).—GRINNELL, Pub. 2, Pasadena Ac. Sci., 1898, 23 (Los Angeles Co., California).

[*Syrnium*] *occidentale* GRAY, Hand-list, i, 1869, 48, no. 507.—COUES, Key N. Am. Birds, 1872, 204.—SHARPE, Hand-list, i, 1899, 293, part.

*S*[*yrnium*] *occidentale* RIDGWAY, Man. N. Am. Birds, 1887, 259, part.

*Strix occidentalis* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 8, 191, part; Nom. N. Am. Birds, 1881, no. 398, part.—COUES, Check List, 1882, no. 478, part.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 371.

*S*[*trix*] *occidentalis* COUES, Key N. Am. Birds, 2d ed., 1884, 510, part.

*Strix occidentalis* PEYTON, Condor, xii, 1910, 122 (Los Angeles Co., California, breeding; habits; descr. nest and eggs).

*Strix occidentalis occidentalis* SWARTH, Univ. Calif. Stud. Zool., vii, no. 1, May 26, 1910, 3, in text, 8 (Pasadena; San Diego Co.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 170.—GRINNELL (J.), Pacific Coast Avifauna, no. 8, 1912, 13.—WILLETT, Pacific Coast Avifauna, no. 7, 1912, 51 (mts. of Ventura, Los Angeles, Riverside, and San Diego counties, California, resident).

### STRIX OCCIDENTALIS CAURINA (Merriam).

#### NORTHERN SPOTTED OWL.

Similar to *S. o. occidentalis* but decidedly darker; the brown darker in tone and greater in area, the white spotting correspondingly reduced; legs and feet more heavily mottled.

*Adult male*.—Length (skin), 425; wing, 325; tail, 220; culmen, from cere, 23.5.<sup>a</sup>

*Adult female*.—Length (skins), 435–503 (462); wing, 315–323 (319); tail, 210–220 (213.2); culmen, from cere, 22.5–23 (22.9).<sup>b</sup>

Pacific coast district, from southern British Columbia (Union Bay, Vancouver Island; lower Fraser River valley; Chilliwack) south-

<sup>a</sup> One specimen (from Point Reyes, California).

<sup>b</sup> Four specimens.

ward through western Washington (Mt. Vernon, Skagit Valley; Seattle; Tacoma) and western Oregon to northern coast district of California (Eureka, Humboldt County; Mount Tamalpais and Point Reyes, Marin County), and along the Sierra Nevada to Calaveras County (Big Trees).

*Strix occidentalis* (not *Syrnium occidentale* Xantus) BELDING, Proc. U. S. Nat. Mus., v, 1883, 550, in text (Big Trees, Calaveras Co., California; notes).—COUES, Check List, 2d ed., 1882, no. 478, part.

*S[trix] occidentalis* COUES, Key N. Am. Birds, 2d ed., 1884, 510, part.

*Syrnium occidentale* BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 343, part.—RHOADS, Auk, x, 1893, 17 (near Tacoma, Washington; crit.); Proc. Ac. Nat. Sci. Phila., 1893, 91 (Tacoma).—BROOKS, Auk, xvii, 1900, 105 (lower Fraser Valley, Brit. Columbia).

*Syrnium occidentale caurinum* MERRIAM, Auk, xv, Jan., 1898, 39, 40 (Mt. Vernon, Skagit Valley, Washington; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xvi, 1899, 109.—BOWLES, Auk, xxiii, 1906, 143 (Tacoma, Washington, Oct. 19, 1898).

*Syrnium occidentalis caurinum* KERMODE, Provincial Mus., Victoria, 1909, 46 (Chilliwack, Brit. Columbia).

*Strix occidentalis caurina* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 371; Check List, 3d ed., 1910, 170.—GRINNELL, (J.), Condor, xi, 1909, 138 (Mt. Tamalpais, Marin Co., California, May; crit.); Pacific Coast Avifauna, no. 8, 1912, 13.—BOWLES, Condor, xii, 1910, 110 (Tacoma, Washington, breeding).—CLAY, Condor, xiii, 1911, 75 (near Eureka, n. California; notes).—RATHBUN (S. F.), Auk, xxviii, 1911, 493 (Seattle, Washington, Oct. 27, 1907).

*Strix occidentalis caurinum* BROOKS, Auk, xxvi, July, 1909, 313 (Chilliwack, Brit. Columbia, Jan.).

*Strix occidentalis caurinus* SWARTH, Univ. Calif. Pub. Zool., vii, no. 1, May 26, 1910, 8 (Mt. Tamalpais).

*Strix occidentalis caurinum* CLARK (A. H.), Proc. U. S. Nat. Mus., xxxviii, 1910, 59 (Union Bay, Vancouver I.).

[*Syrnium*] *caurinum* SHARPE, Hand-list, i, 1899, 293.

### STRIX OCCIDENTALIS HUACHUCÆ Swarth.

#### ARIZONA SPOTTED OWL.

Similar to *S. o. occidentalis* but white spots on upper parts larger, those on lower hindneck distinctly transverse, or in form of broad transverse bars; brown markings on under parts narrower, on chest forming distinct and regular bars, and rather lighter in tone; legs and feet paler buff (sometimes nearly white), less heavily mottled with paler brown.

*Adult male*.—Length (skins), 405–410 (407.5); wing, 312–321 (316.5); tail, 195–215 (205); culmen, from cere, 20.5–21 (20.7).<sup>a</sup>

*Adult female*.—Wing, 317; tail, 225; culmen, from cere, 19.5.<sup>b</sup>

Mountains of Arizona (Huachuca and Santa Catalina ranges; Fort Whipple; Santa Clara Valley; near Tucson) and eastward through

<sup>a</sup> Two specimens.

<sup>b</sup> One specimen.



New Mexico (San Miguel County, 9,500 feet; upper Pecos River) to western Texas (Guadalupe Mountains); north to Colorado (Denver; Fort Lewis).

*Syrnium occidentale* (not of Xantus, 1859) COUES, Ibis, 1865, 162 (Ft. Whipple, Arizona).—RIDGWAY, Am. Nat., viii, 1874, 239 (Tucson, Arizona); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 29, 38, part (Tucson).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 369.—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 115 (Santa Clara Valley, Arizona, breeding).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 343, part (Colorado; New Mexico; Arizona).—COOKE, Birds Col., 1897, 77 (several Colorado records).—MITCHELL, Auk, xv, 1898, 308 (San Miguel Co., New Mexico, 9,500 ft.).—OBERHOLSER, Auk, xix, 1902, 300 (Guadalupe Mts., w. Texas).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 8 (Huachuca Mts., Arizona, above 6,500 ft.).

*S[yrnium] occidentale* RIDGWAY, Man. N. Am. Birds, 1887, 259, part.

[*Syrnium*] *occidentale* SHARPE, Hand-list, i, 1899, 293, part.

*Syrnium occidentalis* SMITH (H. G., jr.), Auk, iii, 1886, 284 (Denver, Colorado, Jan. or Feb., 1882).

*Strix occidentalis* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 8, 191, part; Nom. N. Am. Birds, 1881, no. 398, part.—COUES, Check List, 2d ed., 1882, no. 478, part.—HENSHAW, Auk, iii, 1886, 79 (upper Pecos R., New Mexico).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 371, part.—COOKE, Auk, xxvi, 1909, 412 (Ft. Lewis, Colorado).—VISHER, Auk, xxvii, 1910, 281 (Santa Catalina Mts., Arizona, breeding in pine belt).

*S[trix] occidentalis* COUES, Key N. Am. Birds, 2d ed., 1884, 510, part.—RIDGWAY, Man. N. Am. Birds, 1887, 257, part.

*Strix occidentalis huachucae* SWARTH, Univ. Calif. Pub. Zool., vii, no. 1, May 26, 1910, 3 (Huachuca Mts., Arizona; coll. G. F. Morcom).

### STRIX OCCIDENTALIS LUCIDA (Nelson).

#### MEXICAN SPOTTED OWL.

Similar to *S. o. occidentalis*, but under parts with much less of buff and correspondingly more of white; legs and feet white or buffy white, more or less spotted with brown.

*Adult female*.—Length (skins), 435–457 (446); wing, 320–328 (324); tail, 216–226 (221); culmen, from cere, 22–23.5 (22.7).<sup>a</sup>

Mountains of central Mexico, in States of Guanajuato and Michoacán (Mount Tancitaro).

*Syrnium occidentale* (not of Xantus) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 260 excl. syn. part (Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 10, excl. syn. (Mexico, Guanajuato).

[*Syrnium*] *occidentale* SHARPE, Hand-list, i, 1899, 293, part.

*Syrnium occidentale lucidum* NELSON, Proc. Biol. Soc. Wash., xvi, Nov. 30, 1903, 152 (Mt. Tancitaro, Michoacan; coll. U. S. Nat. Mus.).

#### Genus ASIO Brisson.

*Asio* BRISSON, Orn., i, 1760, 477. (Type, by tautonymy, [*Asio*] *asio* Brisson=*Strix otus* Linnæus.)

*Otus* (not of Pennant, 1769) CUVIER, Leçons Anat. Comp., 1800, tab. ii. (Type, by tautonymy, *Strix otus* Linnæus.)

<sup>a</sup> Two specimens. (No males examined.)

*Aegolius* (not of Kaup, 1829, nor *Aegolia* Billberg, 1820) KEYSERLING and BLASIUS, Wirb. Eur., Erstes Buch, 1840, pp. xxxii, 88. (Types, *Strix otus* Linnæus and *S. brachyotus* Forster.)

*Nyctalops* WAGLER, Isis, 1832, 1221. (Type, *N. stygius* Wagler.)

*Brachyotus* GOULD, Proc. Zool. Soc. Lond., 1837, 11, in text. (Type, *Otus (Brachyotus) galapagoensis* Gould.)

*Phasmoptynx* KAUP, Isis, 1848, 769. (Type, *Otus capensis* Smith.)

*Ascalaphus* <sup>a</sup> (not *Ascalaphia* Geoffroy St.-Hilaire, 1837) MORRIS, in N. Wood's Naturalist, ii, no. 9, June, 1837, 123. (Type, *A. auritus* Morris=*Strix otus* Linnæus.)

Medium-sized Bubonidæ (wing about 290–340 mm.) with distinct (usually very conspicuous) ear tufts, enormously developed and conspicuously asymmetrical external ear openings (these occupying much the greater part of the postocular region of the head, and conspicuously operculate anteriorly), relatively large, oval, obliquely longitudinal nostrils, long, distinctly arched cere, and relatively small bill and feet.

Bill relatively weak, rather compressed; top of cere distinctly arched, nearly as long as chord of culmen. Nostril large, broadly elliptical or oval, obliquely horizontal, opening in anterior edge of the laterally inflated cere, and showing a distinct cartilaginous shelf just within the upper posterior margin. External ear openings excessively large, occupying nearly the full height of the head, inversely coma-shaped, the upper extremity narrow and recurved, the lower broad, more or less rounded, and produced forward over basal half (more or less) of malar region, the ear orifice opening (in left ear) immediately above an obliquely transverse ligamentous bridge or (in right ear) between two such ligaments, the margin of the external opening produced into a distinct dermal flap, widest in front, the two ears conspicuously asymmetrical but the skull symmetrical. Wing long, with longest primaries exceeding distal secondaries by more than one-third the total length of wing; tenth, ninth and tenth, eighth and ninth, or seventh, eighth, and ninth<sup>b</sup> primaries longest, the tenth (apparent outermost) sometimes shorter than seventh, more often a little shorter than eighth; only the tenth or tenth and ninth with inner web emarginated or sinuated. Tail about half as long as wing, rounded. Feet relatively small; tarsus decidedly to much longer than middle toe without claw, densely clothed, all round, with soft feathers, the toes usually feathered (except beneath and on terminal phalanges), sometimes naked to base.

*Coloration* (of American species).—Blackish brown, ochraceous, buffy, and whitish, the first predominating above, the lighter hues prevailing beneath, the markings on under parts having a longitu-

<sup>a</sup> Ἀσκάλαφος, a bird, supposed to be a kind of owl. (Richmond.)

<sup>b</sup> First, first and second, second and third, or second, third, and fourth from outside.

dinal tendency; remiges and rectrices more or less distinctly barred or transversely spotted.

*Range*.—Nearly cosmopolitan, but most of the species of more restricted range. (Several species.<sup>a</sup>)

With the incomplete representation of species available at the present time, I am not able to subdivide the genus satisfactorily. *A. flammeus* and *A. capensis* differ from *A. otus*, *A. wilsonianus*, and *A. stygius* in possessing very small (almost rudimentary) ear-tufts, while *A. stygius* is peculiar in having the toes naked. *A. capensis* is, however, intermediate in the latter respect, and further agrees with all the species examined except *A. flammeus* and its allies in having two instead of only one primary emarginated on inner web.

#### KEY TO THE SPECIES OF ASIO.

- a. Ear-tufts very conspicuous; upper parts finely mottled or vermiculated.
  - b. Toes feathered; face ochraceous or buffy. (*Asio*.) (Whole of temperate North America, south to central Mexico.).....***Asio wilsonianus*** (p. 654).
  - bb. Toes naked; face dusky or dull grayish. (*Nyctalops*.) (Southern Mexico to Brazil; Cuba.).....***Asio stygius*** (p. 658).
- aa. Ear-tufts rudimentary; upper parts not mottled or vermiculated (toes feathered). (*Brachyotus*.)
  - b. Legs immaculate; under parts without distinct (if any) transverse markings; general coloration lighter.
    - c. Larger (wing 298-330 mm.); dorsal region conspicuously striped with ochraceous or buffy; outer webs of primaries with ochraceous or buffy largely predominating on proximal portion. (Whole of Palearctic Region and whole of continental North and South America.).....***Asio flammeus*** (p. 661).
    - cc. Smaller (wing 270-286 mm.); dorsal region nearly uniform brown; outer webs of primaries with ochraceous spaces on proximal portion not larger than the brown interspaces. (Porto Rico.).....***Asio portoricensis*** (p. 667).
  - bb. Legs heavily streaked with dark brown; under parts with distinct transverse markings; general coloration darker. (Galapagos Archipelago.)  
***Asio galapagoensis*** (p. 668).

#### ASIO WILSONIANUS (Lesson).

##### LONG-EARED OWL.

*Adults (sexes alike)*.—Upper parts transversely mottled with blackish brown and grayish white, the former predominating, especially on

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<sup>a</sup> Owing to lack of specimens of some of the forms enumerated in Sharpe's Hand-list (i, 1899, 280, 281), I am not able to state the number of species belonging to this genus with approximate definiteness. At least two of the fourteen there named must, however, be taken out, namely, no. 3, *clamator* (Vieillot), which belongs to *Rhinoptynx*, and no. 13, *grammicus* (Gosse), which is the type of *Pseudoscops*, both of these being quite distinct genera. No. 4, *midas* (Schlegel), no. 5, *madagascariensis* (Smith), and no. 14, *macrurus* (Kaup), are unknown to me.



back, the feathers of hindneck and wings ochraceous or buff beneath surface; outermost scapulars with a few irregular, indistinct spots of white on outer webs; primary coverts dusky with transverse series of mottled grayish spots, these becoming more buffy or ochraceous basally; ground-color of primaries grayish, especially on proximal quills, passing into buffy or ochraceous basally (extensively on distal quills), the grayish portion finely mottled, transversely, with dusky, and crossed by about seven transverse series of quadrate blackish brown spots, these anteriorly about as wide as the buffy or mottled grayish interspaces; on the fourth (from outside) quill the basal portion immaculate buffy for about 20–25.5 mm. from tip of primary coverts, but on the outermost and proximal quills the spots approach closely to tips of primary coverts; secondaries crossed by about nine or ten bands of dusky; general color of wing-coverts like back, but growing paler toward edge of wing, their tips also pale (sometimes nearly white); tail banded like secondaries; ear-tufts with median portion (broadly) plain black, the edges of the feathers (broadly) buff or ochraceous, passing into white (usually more or less broken by blackish lines or mottling) terminally; forehead and post-auricular region minutely speckled with blackish and white; “eyebrows” (superciliary region) and lores grayish white or pale gray, the eyes surrounded by blackish, this widest anteriorly, above, and below; face plain dull ochraceous; facial disk black, becoming broken into a variegated collar across throat; chin and upper throat plain white; general color of under parts ochraceous or buff, the exposed surface of the feathers, however, white; breast with large longitudinal median blotches of clear sooty brown; sides and flanks with median stripes of sooty brown crossed by as broad, or broader, transverse bars of the same; abdomen, tibial plumes, and legs plain ochraceous or buff, passing into nearly white on lower portion of tarsus and on toes, the tibial plumes usually with a few sagittate spots of brownish; under tail-coverts with median narrow stripes or streaks of dusky, these bifurcate or Y-shaped proximally; under wing-coverts plain ochraceous, the under primary coverts blackish brown, forming a conspicuous spot; bill dull black; iris bright lemon yellow.

*Young*.—Remiges and rectrices (if developed) as in adults; other portions broadly barred with blackish brown and grayish white, the latter predominating anteriorly; “eyebrows” and loreal bristles black; legs white.

*Adult male*.—Length (skins), 325–373 (345); wing, 284–302 (292); tail, 121.5–157.5 (147.6); culmen, from cere, 15–18 (16.6).<sup>a</sup>

*Adult female*.—Length (skins), 320–382 (345); wing, 288–303 (293.9); tail, 143.5–160 (151); culmen, from cere, 16.5–18.5 (17.3).<sup>b</sup>

Temperate North America; north to Newfoundland, southern Quebec (Point de Monts), northwestern Ontario (Elmsdale; Port Sydney), southern Keewatin, southern Mackenzie, British Columbia, and coast of southern Alaska (Taku River); breeding southward to Virginia, Arkansas, northern Texas, southern California, etc.; winters over greater part of its range and southward to central Mexico (Guanajuato; Valley of Mexico and Mexicalcingo, Mexico; Orizaba, Puebla; Las Bocas, Durango).

(?) [*Strix*] *americana* GMELIN, Syst. Nat., i, pt. 1, 1788, 288 (South America; based on *Asio americanus* Brisson, Orn. p. 145, no. 7, and *Bubo ochro-cinereus pectore maculoso* Feuillee, Journ. des obs., ed. 1725, p. 59.—LATHAM, Index Orn., i, 1790, 54.

*Otus americanus* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1825, 57.—BONAPARTE, Geog. and Comp. List, 1838, 7.—JARDINE, Contr. Orn., 1848, 81 (Bermudas).—KAUP, Jardine's Contr. Orn., 1852, 113 (monogr.); Trans. Zool. Soc. Lond., iv, 1859, 232 (monogr.).—ALLEN, Proc. Essex Inst., iv, 1864, 51.

[*Otus*] *americana* BONAPARTE, Consp. Av., i, 1850, 50.

[*Otus*] *americanus* GRAY, Hand-list, i, 1869, 50, no. 540.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116.

[*Otus*] *americanus* MAXIMILIAN, Journ. für Orn., 1858, 25 (Missouri River).

*Otus vulgaris americanus* SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Oti), 1863, 2; no. 36 (Revue), 1873, 2.

[*Asio otus*.] Subsp. *α*. *Asio americanus* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 229 (Ft. Simpson, and Sumas, Brit. Columbia; w. Mexico; Valley of Mexico).

*Asio americanus* MEARNs, Bull. Essex Inst., xii, 1879, 121 (Hudson Highlands, New York).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 395.

*A[sio] americanus* RIDGWAY, Bull. Ills. State Labr. N. H., no. 4, 1881, 187 (Illinois).

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Eleven specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
Five adult males from eastern United States.....	292.6	150.9	16.1
Eight adult males from western United States.....	292.2	144.4	16.9
One adult male from Guanajuato, Mexico.....	287	156	17
FEMALES.			
Six adult females from eastern United States.....	293.8	150.5	17.2
Five adult females from western United States.....	294.2	151	17.3

- Strix otus* (not of Linnæus) WILSON, Am. Orn., vi, 1812, 73, pl. 51, fig. "1"=3.—BONAPARTE, Journ. Ac. Nat. Sci. Phila., iv, pt. ii, 1825, 271; Obs. Wilson's Am. Orn., 1826 [130]; Ann. Lyc. N. Y., ii, pt. i, 1826, 37.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 72.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 130; 2d ed., 1840, 139.—AUDUBON, Orn. Biog., iv, 1838, 572, pl. 383.—PEABODY, Rep. Orn. Mass., 1839, 88.
- S[trix] otus* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 356; Obs. Wilson's Am. Orn., 1826 [17].
- A[sio] otus* JORDAN, Man. Vertebr. E. U. S., 4th ed., 1884, 107.
- Uula otus* JAMESON, ed. Wilson's Am. Orn., i, 1831, 104.
- Otus wilsonianus* LESSON, Traité d'Orn., 1831, 110 (New York).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 181; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 53.—BREWER, N. Am. Oology, 1857, 67.—BAIRD, Rep. Pacific R. R. Surv., x, no. 2, 1859, 12 (Cochetope Pass; Rio Grande Valley; descr.); Cat. N. Am. Birds, 1859, no. 51.—KENNERLY, Rep. Pacific R. R. Surv., x, no. 3, 1859, 20 (near Aztec Mts., New Mexico).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, no. 2, 1860, 155 (Washington).—VERRILL (A. E.), Proc. Essex Inst., iii, 1862, 142 (Oxford Co., Maine, resident).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity New York City).—BLAKISTON, Ibis, 1863, 49, (Red R., Manitoba, to Mackenzie R.).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 50 (Ft. Whipple, Arizona).—COOPER, Orn. Calif., 1870, 426.—RIDGWAY, Orn. Fortieth Parallel, 1877, 570 (Sacramento, California, June; San Francisco, Jan.; Carson City, etc., Nevada).
- [*Otus vulgaris* var. *wilsonianus* COUES, Key N. Am. Birds, 1872, 204.
- Otus vulgaris* . . . var. *wilsonianus* COUES, Check List, 1873, no. 320.—RIDGWAY, Bull. Essex Inst., v, 1873, 185 (Colorado).
- O[tus] vulgaris* . . . var. *wilsonianus* RIDGWAY, Ann. Lyc. N. Y., x, 1874, 378 (Illinois).
- Otus vulgaris* var. *wilsonianus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 18.—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 9 (Utah).—RATHBUN (F. R.), Rev. List Birds Centr. N. Y., 1879, 26 (resident).—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 213 (Bermudas).
- [*Otus vulgaris* var. *wilsonianus*] b. *wilsonianus* COUES, Birds Northwest, 1874, 304.
- Otus vulgaris wilsonianus* RIDGWAY, Bull. Essex Inst., vi, Oct., 1874, 171 (Sacramento, California); vii, 1875, 11 (Carson Valley, Nevada, resident).
- Asio wilsonianus* RIDGWAY, Proc. U. S. Nat. Mus., March 27, 1880, 7; Orn. Illinois, i, 1889, 405.—COUES, Check List, 2d ed., 1882, no. 472.—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 237 (Point de Monts, Quebec, 3 specs., May).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 366; 3rd ed., 1910, 169.—RALPH and BAGG, Trans. Oneida Hist. Soc., iii, 1886, 119 (Oneida Co., New York, breeding).—SETON, Auk, iii, 1886, 155 (Big Plain and Red R. Valley, Manitoba, summer resident).—BRYANT, Proc. Calif. Ac. Sci., ser. 2, ii, 1889, 283 (between Tia Juana and San Pedro Martir, Lower California).—RIVES, Cat. Birds Virginias, 1890, 63 (breeding near Washington, D. C.).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 539 (Manitoba, summer resident; habits, etc.).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 328, pl. 12, fig. 2 (egg).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 34 (San Diego, n. Chihuahua, March).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 4 (San Diego, Santa Yzabal, and Carretas, Chihuahua; Valley of Mexico and Mexicalcingo, Mexico; Orizaba, Puebla).—STONE, Auk, xvi, 1899, 285 (Yates Co., New York, breeding).—FLEMING, 3622°—Bull. 50, pt 6—14—42



- Auk, xviii, 1901, 38 (Elmsdale and Port Sydney, n. w. Ontario, rare); xxiv, 1907, 74 (Toronto, Ontario, breeding).—WILSON (B. H.), Wilson Bull., no. 54, 1906, 3 (Scott Co., Iowa, breeding).—JONES, Wilson Bull., no. 57, 1906, 115 (Cleveland, Ohio, common resident).—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxii, 1906, 164 (Las Bocas, n. w. Durango, Feb.).—BEARD, Auk, xxiii, 1906, 337 (Flushing, Long Island, breeding).—HOLMES, Wilson Bull., no. 58, 1907, 23 (Summit, New Jersey, rare summer resident).—SHARP, Condor, ix, 1907, 87 (San Diego Co., California, breeding).—THAYER and BANGS, Condor, ix, 1907, 137 (Rosario, Lower California, Nov.).—LARSEN, Wilson Bull., no. 60, 1907, 114 (Lyman Co., South Dakota, resident).—ROBERTS, in Wilcox's Hist. Becker Co., Minn., 1907, 174 (summer resident).—BENT, Auk, xxv, 1908, 25 (s. w. Saskatchewan, breeding).—HARLOW, Auk, xxv, 1908, 278 (e. Pennsylvania; breeding?).—DEANE (W.), Auk, xxvi, 1909, 78 (Shelburne, New Hampshire, Oct. 12, 1908).—VAN ROSSEM, Condor, xi, 1909, 208 (Los Coronados Islands, Lower California).—HESS, Auk, xxvii, 1910, 23 (Lynn Grove, Champaign Co., Illinois, breeding).—FERRY, Auk, xxvii, 1910, 198 (Prince Albert, Saskatchewan, breeding).—MILLER (R. F.), Auk, xxvii, 1910, 340 (Philadelphia Co., Pennsylvania, breeding).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 64 (Taku R., s. Alaska; crit.).—SMITH (A. P.), Auk, xxix, 1912, 255 (near Brownsville, Texas, Jan. 4, 1912).
- A[sio] wilsonianus* COUES, Key N. Am. Birds, 2d ed., 1884, 507.—RIDGWAY, Man-N. Am. Birds, 1887, 257.
- [*Asio*] *wilsonianus* SHARPE, Hand-list, ii, 1900, 280.
- Nyctalops wilsonianus* STONE, Auk, xx, July, 1903, 275.—GRINNELL (J.), Auk, xxii, 1905, 383 (Mt. Pinos, California).
- O[tus] wilsonius* GRAY, Gen. Birds, i, 1844, 40.
- Otus wilsonius* DREW, Bull. Nutt. Orn. Club, vi, 1881, 141 (Colorado).
- Asio wilsonius* BOWLES, Auk, xxiii, 1906, 143 (Tacoma, Washington, rare visitant).
- Otus vulgaris* (not of Fleming) JARDINE, ed. Wilson's Am. Orn., ii, 1832, 278.—AUDUBON, Synopsis, 1839, 28; Birds Am., oct. ed., i, 1840, 136, pl. 37.—MARTENS, Journ. für Orn., 1859, 212 (Bermudas).—BLAND, An. Rep. Smithsonian. Inst., 1859, 287 (Bermudas).
- (?)*O[tus] zonurus* KAUP (Gray MS.), Jardine's Contr. Orn., 1852, 113.
- Otus zonurus* KAUP, Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 234.
- [*Otus*] *zonurus* GRAY, Hand-list, i, 1869, 50, no. 541.
- Bubo asio* (not *Strix asio* Linnæus) DE KAY, Zool. N. Y., ii, 1844, 25, pl. 12, fig. 25.
- Asio peregrinator* STRICKLAND, Orn. Syn., i, 1855, 207 (ex *Strix peregrinator*, capite aurito, corpore versicolore, the sharp-winged owl, Bartram, Travels, p. 289).

### ASIO STYGIUS (Wagler).

#### STYGIAN OWL.

*Adults (sexes alike).*—General color of upper parts plain dark sooty brown, but this broken by large, irregular spots or blotches of buff on pileum, hindneck, back, and scapulars, the buff mostly concealed on dorsal region, more in form of broad streaks on hindneck and pileum, the forehead rather densely streaked with pale buff or whitish; lesser wing-coverts mostly uniform dark sooty brown, but in part irregularly spotted with buff or ochraceous; middle and greater coverts, in part, irregularly mottled or marbled with pale buff or dull white,

intermixed with a few irregular spots or blotches of deep buff or light ochraceous; outer webs of secondaries and proximal primaries crossed by indistinct (sometimes obsolete) bands of lighter sooty brown, more or less mottled, those of distal primaries with distinct large spots of deep buff or ochraceous, more or less mottled with darker, these indistinct on distal half or more, obsolete terminally, sometimes wanting altogether on one or two outermost primaries; tail crossed by a variable number (about four to seven) narrow, interrupted bands of pale buff to ochraceous, these usually mottled centrally with dark sooty brown, sometimes forming a nearly uniform dusky bar between two narrower buff or ochraceous ones; ear-tufts uniform sooty black for greater part; orbital region, superciliary region, and lores sooty black, the latter more or less intermixed beneath surface (basally) with pale dull grayish buffy; blackish orbital space bordered posteriorly and below by a semicircular band (broadest below) of dull grayish buffy to buffy grayish white (the two of opposite sides connected on chin), this bordered posteriorly by a semicircular band of uniform sooty black; facial rim sooty black or dark sooty brown, speckled with buff; across middle of throat a band of sooty black or dark sooty brown (confluent with the uniform blackish band on terminal portion of auricular region) spotted, barred, or streaked with buffy; chest dull buffy white to pale buff, with large longitudinal spots of uniform dark sooty brown; rest of under parts more strongly buffy (sometimes deep ochraceous-buff), with more or less of white on distal portion of feathers of sides and flanks, and with irregular broad stripes of dark sooty brown, these (except sometimes on breast) throwing off two or more lateral bars of the same color, thus producing a more or less distinct "herring-bone" pattern; long tibial plumes streaked mesially with dark sooty brown; legs buff or ochraceous-buff, sometimes immaculate, sometimes more or less mottled or flecked with dusky; under tail-coverts streaked mesially with dark sooty brown, sometimes also barred (more or less broadly) with the same; under wing-coverts irregularly spotted or blotched with dark sooty brown and buff or ochraceous, the former mostly on outer portion, where sometimes greatly predominating; under primary coverts uniform dark grayish brown with a large basal area of buff or buffy white; under surface of primaries dark grayish brown distally, paler proximally, where broken by large irregular spots or blotches of buffy; bill dark horn color with paler tip, or wholly blackish; naked toes horn color or dusky (in dried skins).

*Adult male*.—Length (skin), 395; wing, 305; tail, 157; culmen, from cere, 21.5.<sup>a</sup>

*Adult female*.—Length (skins), 422–460 (440.5); wing, 340–347 (343.5); tail, 169.5–171 (170.2); culmen, from cere, 21.5–24 (22.7).<sup>b</sup>

Cuba and Isle of Pines (La Vega); southeastern Mexico, in State of Vera Cruz (Mirador), southward through Central America (Cobán, Guatemala; Matagalpa and San Rafael del Norte, Nicaragua) and South America to southern Brazil (Taquara, Rio Grande do Sul; São Paulo; Urucúm, Mattogrosso) and Argentina (Tucumán).

*N[ystalops] stygius* WAGLER, Isis, 1832, 1221 (Brazil; coll. Mus. Eichstaett).

*Nystalops stygius* KOENIGSWALD, Journ. für Orn., 1896, 382 (São Paulo, s. Brazil).—DABBENE, Orn. Argent., 1910, 251 (Tucuman, Argentina).

[*Nystalops*] *stygius* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116.

*Otus stygius* PUCHERAN, Rev. Zool., 1849, 29.—KAUP, Jardine's Contr. Orn., 1852, 113; Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 232.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306 (Cuba).—SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Striges), 1863, 6; no. 36 (Revue), 1873, 4.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1865, 5 (Mirador, Vera Cruz).—PELZELN, Orn. Bras., 1868, 10.—RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 17.

*O[tus] stygius* GRAY, Gen. Birds, i, 1844, 40.

[*Otus*] *stygius* GRAY, Hand-list, i, 1869, 50, no. 542 (s. Brazil).—PELZELN, Orn. Bras., 1871, 400.

*Asio stygius* STRICKLAND, Orn. Syn., i, 1855, 207.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 241 (Brazil; Cuba).—BERLEPSCH and IHERING, Zeitschr. Orn., 1885, 166 (Taquara, Rio Grande do Sul, s. Brazil; crit.).—CORY, Auk, iii, 1886, 466 (Cuba; synonymy; descr.); Birds West Ind., 1889, 189; Cat. West Ind. Birds, 1892, 10, 100, 128 (Cuba).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 6 (Mexico; San Rafael del Norte, Nicaragua; Colombia;

<sup>a</sup> One specimen, from Isle of Pines.

<sup>b</sup> Two specimens, from Vera Cruz and Nicaragua.

Locality.	Wing.	Tail.	Culmen, from cere.
MALE.			
One adult male from Isle of Pines.....	305	157	21.5
FEMALES.			
One adult female from Vera Cruz (Mirador).....	340	171	21.5
One adult female from Nicaragua (Matagalpa).....	347	169.5	24
SEX UNKNOWN.			
Two adults from Cuba.....	295	158.5	23
One adult from Guatemala (Coban).....	339	170	21
One adult from Colombia.....	327	170	.....
One adult from Brazil.....	324	164.5	22

The series examined is much too small to justify an opinion of whether the species requires subdivision or not. The Cuban examples are very much like continental ones, but the one from the Isle of Pines is somewhat different from those examined from the main island.



Guiana; Amazon Valley; Brazil).—IHERING, Rev. Mus. Paulista, iii, 1899, 330 (São Paulo, s. Brazil; crit.).—SALVADORI, Boll. Mus. Zool., etc., Torino, xv, 1900, 12 (Urucum, Mattogrosso, s. w. Brazil).—HARTERT and VENTURI, Novit. Zool., xvi, 1909, 235 (Tucuman, Argentina).

[*Asio*] *stygius* CORY, List Birds West Ind., 1885, 21.—SHARPE, Hand-list, i, 1899, 281.

*A[sio] stygius* RIDGWAY, Man. N. Am. Birds, 1887, 257.

*Phasmodopteryx stygius* GURNEY, Cat. Birds of Prey, 1894, 36.

*Otus siguapa* D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Ois., 1840, 31, pl. 2 (Cuba).—BONAPARTE, Cons. Av., i, 1850, 50 (Cuba).—CABANIS, Journ. für Orn., 1855, 465 (Cuba).—GUNDLACH, Repert. Fisico-Nat. Cuba, i, 1865, 226; Journ. für Orn., 1871, 374 (Cuba; habits).

*O[tus] siguapa* GRAY, Gen. Birds, i, 1844, 40.

[*Otus*] *siguapa* GUNDLACH, Journ. für Orn., 1861, 322 (Cuba).—GRAY, Hand-list, i, 1869, 50, no. 543.

*Asio siguapa* STRICKLAND, Orn. Syn., i, 1855, 212.

*Nyctalops stygius siguapa* BANGS and ZAPPEY, Am. Nat., xxxix, April, 1905, 201 (Isle of Pines, Cuba).

[*Otus*] *melanopsis* LICHTENSTEIN, Nom. Mus. Berol., 1854, 6 (Brazil).

*Otus communis*, var. LESSON, Traité d'Orn., 1831, 110 (Brazil).

#### ASIO FLAMMEUS FLAMMEUS (Pontoppidan).

##### SHORT-EARED OWL.

*Adults (sexes alike).*—General color of head, neck, back, scapulars, rump, and under parts light ochraceous to buffy white (the individual variation being very great), each feather, except on rump, with a median stripe of dark brown or blackish brown, the stripes broadest on scapulars; occiput, hindneck, back, and chest with the ochraceous (or buffy) and brown about equal in extent, but on the under parts the brown stripes becoming gradually narrower posteriorly, until on abdomen and sides they form narrow lines; flanks, legs, anal region, and under tail-coverts immaculate, the last nearly (sometimes quite) pure white, the legs more deeply buffy or ochraceous; rump more vinaceous buffy or ochraceous, with indistinct crescentic markings of brown; wing-coverts coarsely variegated with irregular markings of dusky brown and ochraceous or buffy, the latter in form of indentations or confluent spots along edges of feathers, broadest on outer webs; secondaries dusky brown crossed by about five bands of ochraceous or buffy, the last one terminal; primaries ochraceous or buff on proximal two-thirds (more or less), the distal portion dusky brown, tipped (broadly) with buffy, this becoming indistinct or obsolete on longest quills, the dusky brown continued proximally in three to five irregularly transverse series of quadrate spots on outer webs, leaving, however, a large basal area of plain ochraceous or buffy, which sometimes passes into white anteriorly; primary coverts plain blackish brown, with one or two indistinct transverse series of ochraceous spots on middle portion; tail ochraceous or buff passing into white exteriorly and terminally, crossed by about five bands of

blackish brown, about equal in width to the ochraceous or buffy interspaces on middle rectrices but becoming narrower on outer ones, the ochraceous or buffy interspace on the former enclosing central transverse spots of dusky, the terminal ochraceous or buffy band broadest on all the rectrices; "Eyebrows" (superciliary region), lores, chin, and throat dull white, the loreal bristles with black shafts; face dingy ochraceous-white or dull buffy white exteriorly, the eyes broadly encircled with black; facial rim minutely speckled with pale ochraceous or buffy and blackish, except immediately behind ear, where uniform blackish; under wing-coverts immaculate pale buff to white, the terminal half of under primary coverts plain blackish brown (forming a conspicuous spot); under surface of primaries for greater part immaculate buffy white, but terminal portion, and, preceding this, one or two very broad bands, dusky; bill blackish; iris bright lemon yellow.

*Young*.—Above dark sooty brown, the feathers broadly tipped with ochraceous-buff; face uniform brownish black; under parts wholly plain pale dull ochraceous or buffy, tinged anteriorly with smoky grayish.

*Adult male*.—Length (skins), 325–400 (357); wing, 298–330 (312.9); tail, 136.5–161.5 (148.3); culmen, from cere, 15.5–20 (17.2).<sup>a</sup>

*Adult female*.—Length (skins), 340–392 (371); wing, 300–326 (312); tail, 142–158.5 (152); culmen, from cere, 16.5–19.5 (17.7).<sup>b</sup>

<sup>a</sup> Twenty-three specimens.

<sup>b</sup> Sixteen specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
Three adult males from western Europe.....	304	144.7	16.5
Four adult males from eastern Asia.....	311	147.6	16.9
Five adult males from eastern United States.....	310.8	151.4	17.1
Two adult males from western United States.....	307	149.2	16.2
Four adult males from Alaska.....	312.5	146.7	17
Five adult males from southern South America.....	314.6	148.6	18.5
One adult male from Porto Rico ( <i>A. portoricensis</i> ).....		131	17.2
Three adult males from Galapagos Islands ( <i>A. galapagoensis</i> ).....	282.7	136.5	19
FEMALES.			
Three adult females from western Europe.....	308.7	149.2	17.5
Seven adult females from eastern North America.....	308	148.6	17.6
Three adult females from Alaska.....	313.3	151.8	17.2
One adult female from Clarion Island, off w. Mexico.....	324	150	17.5
Two adult females from southern South America.....	323.5	155.5	19
One adult female from Galapagos Islands ( <i>A. galapagoensis</i> ).....	288	142.5	20.5

With a fairly good series of specimens (though insufficient in number of European examples), I am not able to make out any constant differences between American and Old World birds of this species. It is possible, however, that a larger series might produce a different impression.

The whole of continental North and South America, from coast of Arctic Ocean to Patagonia, also Tierra del Fuego, Falkland Islands, and Juan Fernandez and Mas-a-tierra islands, off Chile; breeding, locally, nearly throughout its range, except in more southern portions of eastern United States, where not ascertained to breed south of Massachusetts, northern Ohio, northern Indiana, Missouri, Kansas, and Colorado; winters practically throughout United States, and in Cuba. (Also found throughout Europe and northern Asia and other portions of the Palæarctic Region.)

*Strix flammea* PONTOPPIDAN, Danske Atlas, i, 1763, 617, pl. 25 (Sweden; based on Linnæus, Fauna Suecica, no. 73).

*Asio flammeus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 370; Check List, 3rd ed., 1910, 169.—HERSEY and ROCKWELL, Condor, xi, 1909, 118 (Adams Co., Colorado, resident).—VISHER, Auk, xxvi, 1909, 148 (w. South Dakota, breeding).—CLARK (A. H.), Proc. U. S. Nat. Mus., xxxviii, 1910, 159 (Fusan, Korea).—SAUNDERS, Auk, xxviii, 1911, 37 (Gallatin Co., Montana, resident).

*Strix accipitrina* PALLAS, Reise Russ. Reichs, i, 1771, 455 (Caspian Sea).—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 32.

*Asio accipitrinus* NEWTON, ed. Yarrell's Hist. Brit. Birds, i, 1872, 163.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 234, part (excl. syn. *galapagoensis* Gould).—SHELLEY, Birds Egypt, 1872, 179.—SEEBOHM and BROWN, Ibis, 1876, 112 (lower Petchora, Russia).—BLAKISTON and PRYER, Ibis, 1878, 246 (Yezo and Hakodate, Japan).—SEEBOHM, Ibis, 1878, 324 (Yenesai R., Siberia, lat. 66° 30' to 67°); 1879, 41 (Japan); 1880, 180 (Krasnoyarsk, Yenesai Valley, Siberia).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 396; iv, 1882, 369 (synonymy); xvi, 1893, 664 (Unalaska I., July); Orn. Illinois, i, 1889, 407.—NELSON, cruise "Corwin" in 1881 (1883), 75 (Aleutian Islands and northward along coast to Point Barrow); Rep. Nat. Hist. Coll. Alaska, 1887, 149 (Unalaska, lower Yukon, etc.; habits).—BARROWS, Auk, i, 1884, 29 (Concepcion, Uruguay).—STEJNEGER, Bull. U. S. Nat. Mus., no. 29, 1885, 220 (e. Asiatic and Alaskan references).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 367.—FERRARI-PEREZ, Proc. U. S. Nat. Mus., xvi, 1886, 164 (Chapulco, Puebla, Nov.; Llano de San Baltazar, Puebla, July).—CORY, Auk, iii, 1886, 468 (Cuba); Birds West Ind., 1889, 191; Cat. West Ind. Birds, 1892, 100 (Cuba).—BERLEPSCH, Journ. für Orn., 1887, 133 (Neotropical Region).—GIGLIOLI and SALVADORI, Proc. Zool. Soc. Lond., 1887, 581 (Vladivostok and Poissette Bay, e. Siberia; crit.).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1888, 454 (Seoul, Korea).—RIVES, Cat. Birds Virginias, 1890, 63 (common resident in tidewater region).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., xiii, 1890, 134 (Clarion I., Revillagigedo group, March 4).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 332, pl. 12, fig. 3 (egg).—HARTERT and GRANT, Novit. Zool., xii, 1905, 113 (Azores).—GRANT, Ibis, 1896, 44 (Salvage Islands, n. w. Africa; crit.); Novit. Zool., vii, 1900, 261 (s. Arabia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 7, part (Guadalajara, Jalisco; Chapulco, Puebla; Orizaba, Vera Cruz; Llano de San Baltazar, Puebla; Volcan de Agua, Guatemala; Chile; Falkland Islands; Cuba).—WICKS, Auk, xiv, 1897, 404 (Los Angeles Co., California, breeding).—JONES, Wilson Bull., no. 22, 1898, 61 (Lorain Co., Ohio; formerly common resident, now rare).—IHERING, Rev. Mus. Paulista, iii, 1899, 329 (São Paulo, s. Brazil).—SALVADORI and FESTA, Boll.



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- Asio accipitrinus accipitrinus* SCHALOW, Journ. für Orn., Jan., 1908, 108 (centr. Asia).—HANTZSCH, Journ. für Orn., 1908, 376 (n. e. Labrador).
- Brachyotus accipitrinus* GURNEY, Ibis, 1872, 328 (Formosa); Cat. Birds of Prey, 1894, 36.
- [Brachyotus] accipitrinus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 249 (Hartz Mts.; East Indies).
- Nyctalops accipitrinus* STONE, Auk, xx, July, 1903, 275.—DABBENE, Orn. Argent., 1910, 251 (Tierra del Fuego, Patagonia, etc.).
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- Strix arctica* SPARRMAN, Mus. Carls., fasc. 3, 1788, no. 51, pl. 51 (northern Sweden).—DAUDIN, Traité d'Orn., 1800, 197.
- Strix brachyotus* FORSTER (J. R.), Philos. Trans., lxii, 1772, 384 (Severn R., Kee-watin).—AUDUBON, Orn. Biog., v, 1839, 273, pl. 432, fig. 6.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 141.—HOMEYER, Journ. für Orn., 1868, 256 (e. Siberia).
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- [Strix] brachyotos* GMELIN Syst. Nat., i, pt. 1, 1788, 289.—LATHAM, Index Orn., i, 1790, 55.
- Strix brachyotos* DAUDIN, Traité d'Orn., ii, 1800, 216.—WILSON, Am. Orn., iv, 1811, 64, pl. 33, fig. 3.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 36 (North America).—NAUMANN, Vög. Deutschl., i, 1822, 459, pl. 45, fig. 1.—TEMMINCK, Man. d'Orn., 2d ed., i, 1820, 99; iii, 1835, 51.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 37; Obs. Wilson's Am. Orn., 1826, [240].—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 132.—YARRELL, Hist. Brit. Birds, i, 1843, 121.
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- Strix brachiotus* TEMMINCK, Cat. Syst., 1807, 19.—MEYER and WOLF, Taschenb. Vög. Deutschl., i, 1810, 43.
- [Otus] brachiotus* BOIE, Isis, 1822, 549.
- Strix brachyota* SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 75.
- Otus brachyotus* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 57.—GOULD, Birds Europe, i, 1837 [1836], pl. 40 and text.—VIGORS, Zool. Voy. "Blossom," 1839, 16 (crit.).—AUDUBON, Synopsis, 1839, 28; Birds Am., oct. [ed., i, 1840, 140, pl. 38.—JARDINE, Contr. Orn., 1848, 81 (Bermudas).—REINHARDT, Journ. für Orn., 1854, 438 (Greenland); Ibis, 1861, 5 (Greenland); Vid. Medd. Naturhisk. For. Kjobenhavn, 1873, nos. 12-16, 3 (Greenland).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 182; in Rep. U. S. Nav. Exp. (Gilliss), ii, 1855, 177 (Chile).—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 125; Journ. für Orn., 1860, 242 (Rosario, Argentina).—MARTENS, Journ. für Orn., 1859, 212 (Bermudas).—BLAND, An. Rep. Smithsonian-Inst. for 1858 (1859), 287 (Bermudas).—SCLATER, Proc. Zool. Soc. Lond., 1860, 384 (Falkland Islands); 1867, 339 (Chile).—ABBOTT, Ibis, 1861, 152

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- [Otus] brachyotus* GRAY, Hand-list, i, 1869, 51, no. 549.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116.
- O[tus] brachyotos* D'ORBIGNY and LAFRESNAYE, Mag. de Zool., 1839 (Synop. Avium, p. 9) (Patagonia; Chile; Bolivia).
- Otus brachyotos* D'ORBIGNY, Voy. l'Am. Mérid., iv, pt. 3, 1839, 134 (Bolivia; Peru; Chile; Patagonia; up to 14,000 ft. in Andes; habits).
- Otus brachiotus* LEMBEYE, Aves de la Isla de Cuba, 1850, 21, pl. 4, fig. 1.
- Otus (Brachyotus) brachyotus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 22.
- Asio brachyotus* MACGILLIVRAY, Man. Brit. Orn., i, 1840, 67; Hist. Brit. Birds, iii, 1840, 461.—STRICKLAND, Orn. Syn., i, 1855, 209.—SALVIN, Ibis, 1875, 377 (Juan Fernandez).—GIBSON, Ibis, 1879, 423 (Cape San Antonio, Argentina).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 636 (high plateau of Bolivia); Voy. "Challenger," ii, pt. viii, 1881, 104 (Sandy Point and Elizabeth I., Straits Magellan).—SEEBOHM, Ibis, 1882, 373 (Archangel, n. Russia).—WHITE, Proc. Zool. Soc. Lond., 1882, 622 (Buenos Aires, Argentina).—SEVERTZOW, Ibis, 1883, 55 (Bash-Alai Mts., centr. Asia).—SHARPE, Layard's Bds. South Africa, 1884, 79 (Natal; crit.).—WHITEHEAD, Ibis, 1885, 26 (Corsica).—WITHINGTON, Ibis, 1888, 468 (Lomas de Zamora, Argentina; habits; descr. eggs).—FRENZEL, Journ. für Orn., 1891, 115 (Cordova, Argentina).—APLIN, Ibis, 1894, 193 (Santa Elena, Uruguay; crit.).—HARTERT, Novit. Zool., viii, 1901, 305 (Canary Islands).—GRANT (C. H. B.), Ibis, 1911, 328 (Los Yngleses, Ajó, Argentina, breeding).
- Asyo brachyotus* HOLMBERG, Segundo Censo Argentina, i, 1898, 510.
- Ulula brachyotus* MACGILLIVRAY, Rapac. Birds Great Brit., 1836, 412.
- Aeg[olius] brachyotus* KEYSERLING and BLASIUS, Wirb. Europ., 1840, pp. xxxii, 143.
- [Strix] ulula* (not of Linnæus) GMELIN, Syst. Nat., i, pt. 1, 1788, 294.
- Strix ulula* PALLAS, Zoogr. Rosso-Asiat., ii, 1826, 322.
- Otus ulula* CUVIER, Règne Anim., i, 1817, 328.
- Asio ulula* LESSON, Man. d'Orn., i, 1828, 116.
- Strix tripennis* SCHRANK, Fauna Boica, i, 1798, 112 (Neuburg, Bavaria).
- Strix palustris* BECHSTEIN, Gem. Natürg. Deutschl., ii, 1791, 344 (Hesse and Pommerania); ed. 2, ii, 1805, 906.—VIEILLLOT, Nouv. Dict. d'Hist. Nat., ix, 1817, 601.
- Otus palustris* BREHM, Vög. Deutschl., 1831, 124.—GOULD, Zool. Voy. "Beagle," pt. iii, 1841, 33 (Falkland Islands; Santa Cruz, Patagonia; Maldonado, Argentina; crit.).—FRASER, Proc. Zool. Soc. Lond., 1843, 110 (Colchagua, Chile).

- Brachyotus palustris* BONAPARTE, Geog. and Comp. List, 1838, 7.—GOULD, Birds Great Brit., i, 1862, pl. 32 and text.—DE KAY, Zool. N. Y., ii, 1844, 28, pl. 12, fig. 27.—CABANIS, Journ. für Orn., 1855, 465 (Cuba).—GUNDLACH, Journ. für Orn., 1861, 404 (Cuba; crit.).—TACZANOWSKI, Journ. für Orn., 1872, 350 (e. Siberia).—COUES, Check List, 1873, no. 321; Birds Northwest, 1874, 306, part (synonymy under "general references" and "American references").—DALL, Proc. Calif. Ac. Sci., v, 1874, 273 (Aleutian Islands).—RATHBUN (F. R.), Rev. List Birds Centr. N. Y., 1879, 26 (breeding).—SCOTT, Bull. Nutt. Orn. Club, iv, 1879, 223 (Long Beach, New Jersey, breeding).—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 214 (Bermudas).
- [*Brachyotus*] *palustris* COUES, Key N. Am. Birds, 1872, 204.
- [*Strix passerina*] var. B LATHAM, Index Orn., i, 1790, 66 (*Noctua minor* Gmelin, N. C. Petrop., xv, p. 447, pl. 12).
- Strix caspia* SHAW, Gen. Zool., vii, pt. 1, 1809, 272 (new name for *Strix accipitrina* Pallas).
- Stryx aegolius* PALLAS, Zoogr. Rosso-Asiat., i, 1826, 309.
- [*Brachyotus*] *aegolius* BONAPARTE, Rev. et Mag. de Zool., 1854, 541.
- Asio aegolius* SEEBOHM, Ibis, 1882, 420 (Krasnoyarsk, Siberia; crit.).
- Otus microcephalus* LEACH, Syst. Cat. Brit. Birds, etc., 1816, 11 (Small-headed Horn-Owl; Gloucestershire).
- Strix brachyura* NILSSON, Orn. Suec., i, 1817, 62 (new name for *Strix flammea* Pontoppidan, etc.).
- Otus agrarius* BREHM, Vög. Deutschl., 1831, 124 (Denmark and other northern lands, in spring to Germany).
- Brachyotus agrarius* BREHM, Naumannia, 1855, 270.
- Brachyotus palustris europaeus* BONAPARTE, Consp. Av., i, 1850, 51, in text (Europe; Asia; n. Africa).
- Brachyotus palustris americanus* BONAPARTE, Consp. Av., i, 1850, 51, in text (North America).
- Ot[us] *brachyotus americanus* MAXIMILIAN, Journ. für Orn., 1858, 27 (Missouri).
- [*Brachyotus*] *galapagoensis* (not *Otus galapagoensis* Gould) BONAPARTE, Consp. Av., i, 1850, 51, part (Falkland Islands).
- [*Otus*] *breviauris* LICHTENSTEIN, Nomencl. Av. Mus. Berol., 1854, 6 (Brazil; nomen nudum).
- Otus brevauris* SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Oti), 1863, 4 (in text; crit.).
- Brachyotus leucopsis* BREHM, Naumannia, 1855, 270 (nomen nudum).
- Brachyotus cassinii* BREWER, Proc. Bost. Soc. N. H., v, 1856, 321 (North America); N. Am. Oology, 1857, 68.—CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 54; Orn. U. S. Expl. Exped., 1858, 108 (whole of North Am.; crit.); Proc. Ac. Nat. Sci. Phila., 1862, 313 (Mare I., California, Nov.).—BAIRD, Cat. N. Am. Birds, 1859, no. 52.—HEERMANN, Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 34 (Suisun and Napa valleys, Ft. Tejon, etc., California).—SCLATER, Proc. Zool. Soc. Lond., 1859, 390 (Oaxaca).—SALVIN, Ibis, 1866, 196 (Volcan de Agua, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (Long Island, New York).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 143 (Conchitas, Argentina).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 273 (Nulato, etc., Alaska).—COOPER, Orn. Calif., 1870, 428.—GUNDLACH, Journ. für Orn., 1871, 375 (Cuba).
- [*Brachyotus*] *cassinii* GUNDLACH, Journ. für Orn., 1861, 322 (Cuba).
- Brachyotus cassini* DALL, Proc. Calif. Ac. Sci., v, 1873, 26 (Unalaska I.; habits).
- [*Brachyotus*] *cassini* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 249 ("Rio Grande;" Chile).
- [*Otus*] *cassinii* GRAY, Hand-list, i, 1869, 51, no. 550.
- Otus brachyotus*, *β. cassini* RIDGWAY, Field and Forest, ii, June, 1877, 210 (Colorado).



[*Asio accipitrinus*.] *β. Asio cassini* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 238 (numerous North and South American localities cited).

*Brachyotus palustris*, *β. cassini* RIDGWAY, Orn. Fortieth Parallel, 1877, 571 (San Francisco, California, Feb.).

*Asio accipitrinus cassini* SCHALOW, Sitz.-Ber. Naturf. Freunde Berlin, 1897, no. 5, 70 (Mas-a-tierra, Chile); Zool. Jahrb., Suppl. iv, heft 3, 1898, 698 (e. Tierra del Fuego), 743 (Juan Fernandez; important references).

*Nyctalops accipitrinus cassini* DABBENE, Orn. Argentina, July 16, 1910, 417 (centr. Patagonia).

*Asio accipitrinus mcilhennyi* STONE, Proc. Ac. Nat. Sci. Phila., 1899 (separates issued Dec. 29, 1899), 478 (Point Barrow, Alaska; coll. Ac. Nat. Sci. Phila.); 1900, 28 (Point Barrow).—ALLEN, Auk, xviii, 1901, 174 (reprint of original descr.).

*Asio accipitrinus pallidus* SARUDNY and LOUDON, Orn. Monatsb., 1906, 151 (central Asia).—SCHALOW, Journ. für Orn., 1908, 108.

*Surnia funerea* (not *Strix funerea* Linnæus) COOKE, Auk, ii, 1885, 31 (Corinth, Mississippi).

*Surnia ulula caparoch* (not *Strix caparoch* Müller) SHUFELDT, Auk, vii, 1890, 91 (District Columbia).

*Brachyotus gmelinii* MALM, Göteb. och Bohusl. Fauna, 1877, 75.

### ASIO PORTORICENSIS Ridgway.

#### PORTO RICAN SHORT-EARED OWL.

Similar to *A. flammeus* but decidedly smaller, with larger bill and feet; back, scapulars, and rump with dark brown greatly predominating (almost uniform), and ochraceous or light tawny spaces on distal primaries much smaller, little, if any, exceeding the brown interspaces in extent.

*Adults (sexes alike).*—Above dusky brown (bister), this nearly uniform on dorsal region, the scapulars, however, with narrow edgings of dull light brownish buffy; rump and upper tail-coverts paler brown or fawn color, the feathers with subterminal crescentic bars of dark brown; hindneck broadly streaked with buffy, the brown forming broad (partly guttate) stripes, the pileum narrowly streaked with the same; tail sharply banded with ochraceous-buff and plain dark brown, the brown bands narrow on outermost rectrices (one-half, or less, as wide as the buff interspaces) growing gradually broader toward the middle pair on which the buff is sometimes reduced to spots, usually with a small central blotch of brown; wings with dark brown predominating, but this much broken by large roundish and transversely oval spots of buff or cinnamon-buff on wing-coverts, and by more quadrate spots (running in transverse series) on remiges, those on proximal portion of distal primaries little, if any larger than the brown interspaces; orbital region uniform sooty black or dark sooty brown, this narrower in front of eye; "eyebrows" and lores dull light brownish buff, or dull buffy whitish, the latter with bristly tips blackish; a crescentic band of dull buff extending across posterior portion of auricular region, from base of ear-tufts to throat, where

passing into white on chin, the feathers on aural flaps more whitish; narrow facial rim nearly uniform dark brown; under parts rather light buff, immaculate on median line of abdomen, anal region, under tail-coverts, and legs, but elsewhere longitudinally streaked with bister brown, the streaks very narrow posteriorly, broader anteriorly, where forming broad stripes on chest; under wing-coverts light buff, sometimes immaculate but usually with a few streaks of brown; under primary coverts light buff with a large, sharply defined, terminal area of brown; under surface of remiges predominantly light buff, the secondaries with narrow, distant, bars of grayish brown, the outer primaries with broad bands (more or less irregular) on distal portion, sometimes with one band anterior to middle portion; bill dusky horn color or blackish; iris lemon yellow; naked portion of toes dull brownish (in dried skins).

*Adult male*.—Tail, 131.5; culmen, from cere, 17.5.<sup>a</sup>

Island of Porto Rico, Greater Antilles.

*Strix brachyotus* (not of Gmelin) SUNDEVALL, Oefv. K. Vet. Ak. Förh., 1869, 601 (Porto Rico).

*Otus (Brachyotus) brachyotus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 25, part (Porto Rico).

*Brachyotus cassinii* (not of Brewer) GUNDLACH, Journ. für Orn., 1874, 307, 310 (Porto Rico); 1878, 158, 164 (Porto Rico); Anal. Soc. Esp. Hist. Nat., vii, 1878, 165 (Porto Rico).

*Brachyotus cassini* STAHL, Ornith., vol. 3, 1887, 450 (Porto Rico).

*Asio portoricensis* RIDGWAY, Proc. U. S. Nat. Mus., sigs. 23, 24, April 6, 13, 1882, 366, 370, 371 (Porto Rico; coll. U. S. Nat. Mus.).—CORY, Auk, iii, 1886, 468 (synonymy; descr.); Birds West Ind., 1889, 191; Cat. West Ind. Birds, 1892, 10, 100, 132.—REICHENOW and SCHALOW, Journ. für Orn., 1883, 414 (translation of orig. descr.).—BOWDISH, Auk, xix, 1902, 361 (San Juan Bay, Porto Rico).

*A[sio] portoricensis* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1882, 368 (diagnosis).

*[Asio] portoricensis* CORY, List Birds West Ind., 1885, 21.—SHARPE, Hand-list, i, 1899, 280.

*Brachyotus portoricensis* GURNEY, Cat. Birds of Prey, 1894, 31.

*Asio accipitrinus* (not *Strix accipitrina* Pallas) SALVIN and GODMAN, Biol. Centr.-Am., Aves., iii, 1897, 7, part (Porto Rico).

### ASIO GALAPAGOENSIS (Gould).

#### GALAPAGOS SHORT-EARED OWL.

Similar to *A. flammeus* but decidedly smaller (wing 278–288 mm.), and coloration much darker above, the legs broadly streaked with dark brown, under parts more or less barred, as well as striped, with dark brown, under wing-coverts heavily spotted with dark brown, and outer webs of outer primaries with the buff spaces decidedly smaller than the brown interspaces.

<sup>a</sup> One specimen, the wings defective. Three specimens of unknown sex measure as follows: Wing, 270–286 (278); tail, 126–136 (131); culmen, from cere, 17–17.5 (17.2).

*Adults (sexes alike).*—Predominant color of upper parts dark bistre brown, this broken everywhere (least so on back) by irregular spots, streaks, and bars of buff or cinnamon-buff, this in form of streaks on pileum and hindneck (the streaks much broader on the latter), broad bands on remiges and tail, irregular spotting elsewhere, the last most conspicuous on outer webs of exterior scapulars; lesser wing-coverts with the dark brown very largely predominating; longer primaries with the buffy spaces on proximal portion of outer webs decidedly smaller than the dark brown interspaces; tail with the buff bands slightly narrower than the dark brown interspaces, except on outermost rectrix and inner webs of other rectrices, on the middle pair of rectrices consisting of transverse ocellate spots; orbital region sooty black, this bordered behind and below by dull buffy mixed with blackish, the lores duller and lighter buffy with black shafts; broad facial rim very dark sooty brown, uniform behind ear-openings, minutely speckled with buffy above and on sides of throat; chin dull white or buffy white; rest of under parts deep buff or light cinnamon-buff, the chest broadly striped with dark sooty brown, the breast with similar but narrower, more cuneate, streaks, the sides, flanks, and sides of abdomen with streaks like those on breast but here crossed by (usually two) bars of dark brown, the streaks dilated at point of intersection; under tail-coverts with large V-shaped marks of dark brown, confluent with a median streak of the same; legs deeper cinnamon-buff, the tarsi broadly streaked with dark brown, at least on outer side; under wing-coverts cinnamon-buff with numerous large rhomboid spots and mesial streaks of dark brown; bill grayish black; iris orange-yellow or orange.

*Adult male.*—Length (skins), 330–332 (331); wing, 278–288 (282.7); tail, 135.5–138 (136.5); culmen, from cere, 18.5–19.5 (19).<sup>a</sup>

*Adult female.*—Length (skin), 367; wing, 288; tail, 142.5; culmen, from cere, 20.5.<sup>b</sup>

Galapagos Archipelago (James, Tower, Bindloe, Duncan, Barrington, Chatham, Gardner, Culpepper, Albemarle, and Indefatigable islands).

*Otus (Brachyotus) galapagoensis* GOULD, Proc. Zool. Soc. Lond., 1837, 10 (Galapagos Archipelago; coll. Zool. Soc. Lond.).

*Otus galapagoensis* GOULD, Zool. Voy. 'Beagle,' iii, 1841, 32, pl. 3 (James I., Galapagos).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 323 (Indefatigable I., Galapagos).

*O[tus] galapagoensis* GRAY, Gen. Birds, i, 1844, 40.

[*Otus*] *galapagoensis* GRAY, Hand-list, i, 1869, 51, no. 551.

[*Brachyotus*] *galapagoensis* BONAPARTE, Consp. Av., i, 1850, 51.

*Brachyotus galapagoensis* CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 183.—HARTLAUB, Journ. für Orn., 1854, 170.

<sup>a</sup> Three specimens (two from Tower Island, one from Indefatigable Island).

<sup>b</sup> One specimen (from Tower Island).



- Asio galapagoensis* STRICKLAND, Orn. Syn., i, 1855, 211.—RIDGWAY, Proc. U. S. Nat. Mus., iv, 1882, 371 (synonymy); xiii, 1890, 120, 122, 123 (James I.; Indefatigable I.); xix, 1896, 585 (Albemarle, Hood, Indefatigable, James, Tower, and Bindloe islands; synonymy; reprint of orig. descr.; crit.).—ROTHSCHILD and HARTERT, Novit. Zool., vi, 1899, 175 (Albemarle, Hood, Indefatigable, James, Tower, Bindloe, Duncan, Barrington, Chatham, Gardner, and Culpepper islands); ix, 1902, 405 (Elizabeth Bay and Webbs Cove, Albemarle, I.; Gardner Bay, Hood I.), 417 (Galapagos).—SNODGRASS and HELLER, Proc. Wash. Ac. Sci., v, 1904, 267 (Chatham, Hood, Barrington, Indefatigable, Duncan, James, Albemarle, Bindloe, Tower, and Culpepper islands; crit.; descr. nest and eggs).
- A[sio] galapagoensis* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1882, 368 (diagnosis).—ROTHSCHILD and HARTERT, Novit. Zool., vi, 1899, 202 (Galapagos).
- Asio galapagensis* SALVIN, Trans. Zool. Soc. Lond., ix, 1876, 493 (James, Indefatigable, and Hood islands).—ROTHSCHILD and HARTERT, Novit. Zool., vi, 1899, 117 (Indefatigable I.).
- [*Asio*] *galapagensis* SHARPE, Hand-list, i, 1899, 280.
- [*Brachyotus palustris*] *c. galapagoensis* COUES, Birds Northwest, 1874, 307 (synonymy).
- [*Asio accipitrinus*] *γ. Asio galapagoensis* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 238 (in list of specimens).
- Asio accipitrinus* (not *Strix accipitrina* Pallas) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 234, part (Galapagos).

### Genus RHINOPTYNX Kaup.

*Rhinoptynx* KAUP, Archiv für Naturgesch., xvii, pt. i, 1851, 107. (Type, "*Otus mexicanus* Cuv[er]ier"=*Bubo clamator* Vieillot.)

Rather large Bubonidæ (wing about 240–278 mm.) agreeing with *Asio* in conspicuous ear-tufts and very large, operculate (asymmetrical?) external ear-openings, but with relatively much larger and stouter bill and feet, and smaller, nearly circular nostrils, without any visible internal shelf.

Bill rather stout, only moderately compressed; top of cere nearly straight, decidedly shorter than chord of culmen. Nostril relatively rather small, nearly circular, in anterior edge of cere, without any internal supra-posterior shelf visible from outside. Wing moderate, with longest primaries exceeding distal secondaries by decidedly less than one-third the length of wing; seventh and eighth <sup>a</sup> primaries longest, the tenth (apparent outermost) slightly shorter than fourth; two outer primaries (ninth and tenth) with inner web emarginated near tip. Tail much less than two-thirds as long as wing, slightly but distinctly rounded. Tarsus equal to or longer than middle toe with claw, densely feathered all round, the toes also densely feathered except on terminal phalanges and on under side.

*Coloration* (of *R. clamator*).—Above buffy vermiculated and broadly striped with blackish; beneath buff, conspicuously striped with black.

<sup>a</sup> Third and fourth from outside, not counting the rudimentary (concealed) eleventh primary.

*Range*.—Tropical America, except West Indies and Galapagos Islands. (Monotypic?) <sup>a</sup>

**RHINOPTYNX CLAMATOR (Vieillot).**

**STRIPED HORNED OWL.**

*Adults (sexes alike)*.—Predominant color of upper parts light buff to clear cinnamon-buff or ochraceous-buff, this broken by broad, more or less serrated, stripes of brownish black and coarse transverse vermiculations of the same; outer webs of exterior scapulars mostly white or buffy white; middle and greater wing-coverts with outer webs mostly buffy white to ochraceous-buff or cinnamon-buff, more or less broken, however (especially on greater coverts), by a few irregular bars or transverse vermiculations of dusky; outer webs of alula broadly edged with buffy white or pale buff; secondaries mottled or vermiculated buff or ochraceous-buff (the innermost ones more or less intermixed with grayish), crossed by well-defined narrow bands of mottled dusky; outer webs of primaries pale buff to cinnamon-buff, with quadrate spots of dusky, except at base of longer quills; tail pale buff to cinnamon-buff, crossed by about seven well-defined, narrow bands of dusky, which on outer webs average about as wide as the buffy interspaces, except on outermost rectrix, on which they are narrower and disappear on basal portion, those on inner web very much narrower; both the dark and buffy bars are more or less broken by mottlings of lighter and darker, especially on middle rectrices; ear-tufts uniform black, the inner webs of the feathers broadly edged with white or buffy; whole face, including superciliary region ("eye-brow"), dull white, more or less tinged with brownish (sometimes with deep rusty brown) on suborbital region; broad and conspicuous facial rim uniform black, on the throat broken into guttate streaks on a white and cinnamonaceous ground; foreneck immaculate white; rest of under parts buff or ochraceous-buff and white (the latter sometimes wanting in more deeply colored specimens), the sides of breast with large guttate longitudinal spots of black, the sides and flanks with much narrower, more linear, stripes of the same; anal region, under tail-coverts, and legs immaculate buff, or the longest under tail-coverts sometimes with very narrow terminal mesial streaks, and the tarsi sometimes sparsely flecked with dusky; under wing-coverts buffy white to light ochraceous-buff, usually with a few dusky streaks toward edge of wing, sometimes wholly immaculate; under primary-coverts dark grayish brown with basal half (approximately) pale buff; under surface of remiges pale buff, the distal portion of prima-

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<sup>a</sup> I have not seen *Otus midas* Schlegel nor *O. macrurus* Kaup. The former is said to be closely related to *R. clamator* and may be only subspecifically distinct; the latter remains unidentified.

ries with broad bars or bands of dusky, the secondaries with much narrower zigzag bars of the same; bill grayish black; iris brown.

*Adult male*.—Length (skins), 330–345 (335); wing, 240–244 (241.3); tail, 127–129.5 (128.7); culmen (from cere), 20.5–21.5 (20.8).<sup>a</sup>

*Adult female*.—Length (skins), 350–385 (369); wing, 240–273 (255.8); tail, 132.5–150 (139.8); culmen (from cere), 21–23 (22).<sup>b</sup>

Guatemala, through Costa Rica (San José; El Pozo de Térraba), Panamá (Boquerón, Chiriquí; Paraiso Station, Canal Zone), Colombia (Guaduas; Don Amó; Bogotá), Venezuela (San Antonio, Bermudez; Lake of Valencia; Maracáy, Aráguá), Guianas, and Brazil to southern Brazil (Novo Friborga, São Paulo; Pasage de la Bugre; Faz. Esperança), Argentina, Paraguay, and northeastern Peru (Tarapoto).

(??)[*Strix*] *americana* GMELIN, Syst. Nat., i, pt. 1, 1788, 288 (South America; based on *Asio americanus* Brisson, Orn. (ed. 1763), i, 145; *Bubo ochro-cinereus pectore maculoso* Feuillee, Journ. des Obs., ed. 1725, 59).

*Otus americanus* JARDINE, Ann. and Mag. Nat. Hist., xviii, 1846, 118.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 123.—EULER, Journ. für Orn., 1869, 248 (Brazil).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 634 (Argentina).—KOENIGSWALD, Journ. für Orn., 1896, 382 (Sao Paulo, s. Brazil).

(??)[*Strix*] *mexicana* GMELIN, Syst. Nat., i, pt. 1, 1788, 288, no. 15 (Mexico; based on *Mexican Eared Owl* Latham, Synop. Birds, i, pt. 1, 123; *Strix asio mexicana* Brisson, Orn., i, 498).—LATHAM, Index Orn., i, 1790, 54.

*Strix mexicana* DAUDIN, Traité d'Orn., ii, 1800, 214.—SHAW, Gen. Zool., vii, 1809, 228.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 40 (cites Ois. Am. Sept., pl. 3).

*Strix mexicanus* AUDUBON, Orn. Biog., iv, 1838, 574.

<sup>a</sup> Three specimens.

<sup>b</sup> Six specimens.

Locality.	Wing.	Tail.	Culmen, from ceres.
MALES.			
Two adult males from Costa Rica.....	240	129.5	20.7
One adult male from Venezuela.....	244	127	21
SEX UNKNOWN.			
One specimen from Costa Rica.....	250	142.5	21
One specimen from Colombia.....	230		
One specimen from Tobago.....	280	149.5	21.5
FEMALES.			
One adult female from Panama (Chiriqui).....	240	132	21
One adult female from Colombia.....	255	139.5	22
Two adult females from Venezuela.....	253	136.7	21.7
One adult female from eastern Brazil (Bahia).....	273	144	23
One adult female from southwestern Brazil (Chapada, Mattogrosso).....	260	150	22.5

The series which I have been able to examine is a meagre one and altogether insufficient for deciding as to whether subdivision is required.



- S[trix] mexicana* BONAPARTE, Proc. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 356; Obs. Wilson's Am. Orn., 1826, [17].
- Otus mexicanus* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 57.—CUVIER, Règne Anim., ed. 2, i, 1829, 341.—LESSON, Traité d'Orn., 1831, 110.—BONAPARTE, Geog. and Comp. List, 1838, 7.—HARTLAUB, Index Azara's Apunt., 1847, 3.—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 195 (crit.).—KAUP, Trans. Zool. Soc. Lond., iv, 1859, 235.—SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Striges), 1863, 2; no. 36 (Review), 1873, 3.—PELZELN, Orn. Bras., 1868, 10.—TACZANOWSKI, Orn. du Pérou, i, 1884, 192.
- O[tus] mexicanus* GRAY, Gen. Birds, i, 1844, 40.
- [*Otus*] *mexicanus* BONAPARTE, Col. p. Av., i, 1850, 50.—GRAY, Hand-list, i, 1869, 51, no. 546.—PELZELN, Orn. Bras., 1871, 400.
- Rhinoptynx mexicanus* KAUP, Jardine's Contr. Orn., 1852, 114; Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 235.—BONAPARTE, Rev. et Mag. de Zool., 1854, 541.
- [*Rhinoptynx*] *mexicanus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 249 (Para, lower Amazon; Surinam).
- Asio mexicanus* STRICKLAND, Orn. Syn., i, 1855, 208.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 231 (Brazil; Bahia; Bogota; Panama).—SCLATER, Proc. Zool. Soc. Lond., 1877, 159, 160 (crit. nomencl.; questions pertinence of specific name).—BOUCARD, Liste Ois. récol. Guat., 1878, 22 (Guatemala).—BERLEPSCH and IHERING, Zeitschr. Orn., 1885, 165 (Taquara, Rio Grande do Sul, s. Brazil).—BERLEPSCH, Journ. für Orn., 1887, 27 (Paraguay; crit.); 122 (Paraguay); 1889, 317 (Tarapoto, n. e. Peru).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 142 (Chapada, Mattogrosso, s. w. Brazil).—IHERING, Revista Mus. Paulista, iii, 1899, 328 (São Paulo, s. Brazil); iv, 1900, 162 (Novo Fribourgo, São Paulo).—GRANT (C. H. B.), Ibis, 1911, 329 (Passage de Bugre, s. Brazil).
- Bubo mexicanus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 61.—ZELEDON, Anal. Mus. Nac. Costa Rica, i, 1887, 125 (Costa Rica).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 129 (Cayenne).
- B[ubo] mexicanus* RIDGWAY, Man. N. Am. Birds, 1887, 264.
- Bubo clamator* VIEILLOT, Ois. Am. Sept., i, 1807, 52, pl. 20 ("depuis Cayenne jusqu'à la baie d'Hudson;" type locality, as fixed by Hellmayr, "Spix's types," 1906, 574, Cayenne; coll. Dufresne).
- Scops clamator* GRAY, Cat. Accip. Brit. Mus., 1844, 45.
- Otus clamator* DESCOURTILZ, Orn. Brés., 1854-'56, pl. 5, upper fig.—GURNEY, Cat. Birds of Prey, 1894, 36.—HELLMAYR, Abh. K. B. Ak. Wiss., ii kl., xxii Bd., iii Abt., 1906, 574 (crit. nomencl.), 718 (crit.); Novit. Zool., xv, 1908, 90 (Faz. Esperança, Brazil; crit.).
- Asio clamator* BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1892, 387 (Ica, Peru; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 5 (Paraiso Station, Panama; Peru).—IHERING, Rev. Mus. Paulista, vi, 1904, 336 (Paraguay).—BERLEPSCH, Novit. Zool., xv, 1908, 288 (Cayenne).
- [*Asio*] *clamator* SHARPE, Hand-list, i, 1899, 280.
- Rhinoptynx clamator* BANGS, Proc. Biol. Soc. Wash., xx, March 27, 1907, 31 (San Jose, Costa Rica; crit. nomencl.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 473 (El Pozo de Terraba, Costa Rica; crit.).
- Strix maculata* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 45 (Paraguay; based on *Nanacurutus tacheté* Azara).
- S[trix] maculata* MAXIMILIAN, Beitr. Natürg. Bras., i, 1830, 281 (Brazil).
- Strix longirostris* SPIX, Av. Bras., i, 1824, 20, pl. 9a (plains of interior of Bahia, Brazil).

Genus *PSEUDOSCOPS* Kaup.

*Pseudoscops* KAUP, Isis, 1848, 769; Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 231.  
(Type, *Ephialtes grammicus* Gosse.)

Medium-sized Bubonidæ (wing about 197–229 mm.) with conspicuous ear-tufts, very large, operculate, asymmetrical external ear-openings, naked toes, tail more than half as long as wing, and with three outer primaries emarginated near tip of inner web.

Bill moderately stout; top of cere nearly straight (faintly arched) shorter than chord of culmen. Nostril rather large, broadly oval, in anterior edge of cere. Wing moderate, the longest primaries exceeding distal secondaries by a little less than one-fourth the length of wing; sixth, seventh, and eighth<sup>a</sup> primaries longest, the tenth (apparent outermost) about equal to second;<sup>b</sup> three outer primaries with inner webs emarginated, the third indistinctly so, however. Tail more than half as long as wing, very slightly rounded. Tarsus shorter than middle toe with claw, densely clothed, all round, with soft, hair-like feathers; toes completely naked.

*Coloration*.—Tawny or tawny-buff, vermiculated and streaked with dusky, the vermiculations most distinct on the upper parts, the streaks most so on the lower surface; primaries spotted (in transverse series) with buff and dusky brown, and tail with numerous interrupted bars of the same.

*Range*.—Island of Jamaica. (Monotypic.)

*PSEUDOSCOPS GRAMMICUS* (Gosse).

## JAMAICAN LONG-EARED OWL.

*Adults (sexes alike)*.—General color of upper parts tawny-brown or cinnamon-brown (sometimes more grayish buffy brown), finely vermiculated with dusky and, usually, with more or less distinct mesial streaks of blackish, the pileum usually more distinctly tawny or cinnamonaceous, often with more regular bars of blackish; plumage throughout light ochraceous or ochraceous-buff beneath surface; wing-coverts usually with larger, broader, mesial serrated streaks or hastate markings of dusky and more or less intermixture of irregular dull ochraceous spotting; outer webs of primaries with distinct quadrate spots of dusky and ochraceous, both broken, more or less, by fine mottlings; tail crossed by about seven to ten narrow bands of mottled dusky and mottled brownish buff, these bands sometimes indistinct from confusion of the mottlings; face, including "eyebrows" and lores, deep tawny or russet, more or less darker around eyes; facial rim uniform brownish black for auricular portion (the stiff feathers of auricular operculum dull white or pale dull buff abruptly tipped with brownish black), the gular portion cinnamon-buff or light

<sup>a</sup> Third, fourth, and fifth from outside.

<sup>b</sup> Ninth from outside.

cinnamon (sometimes slightly intermixed with whitish), the feathers usually with black mesial streaks, often with a few small dusky bars also; chin plain cinnamon buff or cinnamon; rest of under parts light to pale ochraceous-tawny or clay color, irregularly vermiculated or freckled with darker and with distinct mesial streaks of dark brown or brownish black, the flanks, etc., with ground color paler, sometimes suffused with dull buffy whitish; legs cinnamon-buff, usually immaculate but sometimes sparsely flecked with brown; under tail-coverts paler cinnamon-buff, nearly if not quite immaculate; under wing-coverts cinnamon-buff, sometimes with a few dusky streaks near edge of wing; under primary-coverts uniform dark grayish brown with basal half (approximately) abruptly pale buff or buffy white; under surface of remiges pale buff banded on outer primaries and distal half or more of other remiges with mottled dusky; bill dull yellowish becoming more horn colored laterally and basally (pale bluish gray in life)<sup>a</sup>; iris brown; naked toes dull brownish in dried skins (dull lead color in life)<sup>a</sup>.

*Young*.—Remiges and rectrices as in adults; back light grayish brown or buffy grayish brown, more or less distinctly barred with dusky; rest of plumage, including wing-coverts, dull buff or light dull cinnamon-buff, sparsely and, for the most part indistinctly, barred with brown, the under tail-coverts, anal region, and legs (usually, at least) immaculate.

*Adult male*.—Length (skins), 270–348 (314); wing, 197–228.5 (213.4); tail, 96–129 (121.2); culmen (from cere), 19–22 (20.2).<sup>b</sup>

*Adult female*.—Length (skins), 310–337 (319); wing, 214.5–229 (222); tail, 115–131 (123.6); culmen (from cere), 20–21.5 (20.6).<sup>c</sup>

Island of Jamaica, Greater Antilles (St. George; Spanishtown; St. Andrews; Priestmans River; mountains above Bath; St. Andrews).

*Ephialtes grammicus* GOSSE, Birds Jamaica, 1847, 19 (Tait-Shafton, Jamaica); Illustr. Birds Jamaica, 1849, pl. 4.

*Pseudoscops grammicus* KAUP, Isis, 1848, 769; Jardine's Contr. Orn., 1852, 113; Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 231.—SCLATER, Proc. Zool. Soc. Lond., 1861, 80.—ALBRECHT, Journ. für Orn., 1862, 204.—CORY, Auk, iii, 1886, 465 (synonymy; descr.); Birds West Ind., 1889, 188; Cat. West Ind. Birds, 1892, 130.—SCOTT, Auk, viii, 1892, 127 (habits).

[*Pseudoscops*] *grammicus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116.—CORY, List Birds West Ind., 1885, 21.

[*Pseudoscops*] *grammicus* NEWTON (A. and E.), Handb. Jamaica, 1881, 110.

[*Scops*] *grammicus* BONAPARTE, Consp. Av., i, 1850, 46.

*Scops grammicus* STRICKLAND, Orn. Syn., i, 1855, 205.—SCLATER, Proc. Zool. Soc. Lond., 1858, 133.

[*Otus*] *grammicus* GRAY, Hand-list, i, 1869, 51, no. 547.

*Asio grammicus* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 242.—CORY, Cat. West Ind. Birds, 1892, 10, 100.—SCLATER, Revised List Birds Jam., 1910, 12.

[*Asio*] *grammicus* SHARPE, Hand-list, i, 1899, 281.

<sup>a</sup> According to Gosse.

<sup>b</sup> Nine specimens.

<sup>c</sup> Five specimens.



## Genus GYMNASIO Bonaparte.

*Gymnasio* BONAPARTE, Rev. et Mag. Zool., vi (2), 1854, 543. (Type, *Strix nudipes* Daudin.)

*Gymnasia* (emendation) GRAY, Hand-list, i, 1869, pp. vi, 47.

*Gymnoglaux* CABANIS, Jour. für Orn., 1855, 466. (Type, *Noctua nudipes* Lembeye (not *Strix nudipes* Daudin) = *Gymnoglaux lawrencii* Selater and Salvin.)

Small Bubonidæ (wing about 160–170 mm.) resembling *Otus* in general appearance but differing in absence of ear-tufts, in having at least the lower half (usually much the greater part) of the tarsus naked, and relatively shorter tenth primary.

Bill moderate; top of cere nearly straight, shorter than chord of culmen. Nostril small, nearly circular, in upper anterior edge of the laterally inflated cere, and inclosing a distinct internal, nearly central cartilaginous tubercle or shelf. Wing rather large, with longest primaries exceeding distal secondaries by one-fourth the total length of wing, or a little more; fifth, sixth, and seventh <sup>a</sup> primaries longest, the tenth (apparent outermost) much shorter than secondaries, the ninth shorter than third; <sup>b</sup> four or five outer primaries with inner webs sinuated. Tail more than half as long as wing, truncate to slightly rounded. Tarsus about one-fourth as long as wing, about one and a half to one and two-thirds times as long as middle toe without claw, at least the lower half (sometimes nearly the entire length), as well as toes, naked.

*Coloration*.—Brown or rufescent above, usually more or less vermiculated with darker, sometimes with white spots on wing-coverts, scapulars, etc.; tail sometimes barred, sometimes unicolored; outer webs of primaries spotted with whitish or brownish buffy; under parts white or buffy, more or less streaked with blackish and barred or vermiculated with blackish, brown, or rufous.

*Range*.—Greater Antilles (islands of Cuba, Porto Rico, St. Thomas, and St. Croix). (Two species.)

## KEY TO THE SPECIES AND SUBSPECIES OF GYMNASIO.

*a*. Upper third, or more, of tarsus densely feathered; back and wing-coverts without distinct white spots; under parts more or less (sometimes profusely) barred or vermiculated; dichromatic. (*Gymnasio nudipes*.)

*b*. Darker and more rufescent brown above; under parts more profusely and more heavily vermiculated and streaked. (Porto Rico.)

*Gymnasio nudipes nudipes* (p. 677).

*bb*. Paler and more grayish brown above; under parts more sparsely and less heavily vermiculated and streaked. (St. Croix; St. Thomas; St. Johns.)

*Gymnasio nudipes newtoni* (p. 679).

*aa*. Upper third of tarsus (except extreme upper portion in front) wholly naked, like lower part; back and wings with conspicuous white spots; under parts without bars or vermiculations, but more or less broadly streaked; not dichromatic (no rufous phase). (Cuba; Isle of Pines.) ..... *Gymnasio lawrencii* (p. 679).

<sup>a</sup> Fourth, fifth, and sixth from outside also, not counting rudimentary eleventh primary.

<sup>b</sup> Eighth from outside, not counting concealed rudimentary eleventh primary.

## GYMNASIO NUDIPES NUDIPES (Daudin).

## BARE-LEGGED OWL.

*Brown phase.*

*Adults (sexes alike).*—Above brown, more or less distinctly marked with irregular narrow transverse bars or vermiculations of paler brown, the anterior part of crown, the back, and scapulars sometimes showing dusky shaft-streaks; wing-coverts similar in coloration to back, but the lower or outermost ones usually with a few irregular whitish spots; secondaries finely vermiculated, like the wing-coverts, but sometimes showing indistinct narrow bands of paler brown; primaries spotted on outer webs with pale brown and whitish; tail vermiculated, much like secondaries, occasionally with indistinct and interrupted bars of lighter brown, these better defined, and paler, on inner webs; “eyebrow” (superciliary region) and lores (sometimes also a subauricular space) white, the feathers with dusky shafts; orbital region dusky brown; auricular region narrowly barred with light and dark brown; under parts mostly white, the feathers with broad mesial streaks of dusky and with more or less numerous transverse vermiculations or narrow and irregular bars of brown, the abdomen and under tail-coverts, however, sometimes immaculate white; short feathers of thighs and upper part of tarsi pale brown or whitish narrowly barred with deeper brown; bill horn color, paler at tip;<sup>a</sup> iris brown;<sup>b</sup> toes and bare part of legs pale brown, the claws horn color.<sup>a</sup>

*Young.*—Above nearly uniform olive-brown, the remiges and rectrices as in adults; lower part and sides of head and neck similar in color to upper parts but much lighter brown; rest of under parts distinctly barred with dusky brown and pale fulvous; anterior portion of “eyebrow” white.

*Rufous phase.*

*Adults (sexes alike).*—Above dull cinnamon-rufous, hazel, or russet, frequently nearly, sometimes quite, uniform; outer webs of exterior scapulars white or pale fulvous, margined with black or dusky; wings as in the brown phase but the brown replaced by cinnamon-rufous; tail dull rufous-brown, uniform or with indistinct narrow bars; “eyebrow,” lores, chin, and throat white, usually showing in strong contrast with the surrounding deep cinnamon-rufous, the white of throat usually extending laterally to behind the auricular region, these lateral branches usually bordered posteriorly by blackish bars, which sometimes, though rarely, also cross the throat; under parts chiefly white, but this much broken by irregular cross-lines and ver-

<sup>a</sup> A. and E. Newton.

<sup>b</sup> According to the Messrs. Newton the iris (of *G. n. newtoni*) is “bright hazel.”

miculations of cinnamon-rufous (which color usually predominates on chest and sides of breast), the feathers showing also broad mesial stripes of dusky, usually confluent with the rufescent cross-bars, but sometimes sharply lanceolate on abdomen, flanks, and under tail-coverts; bill, etc., as in adults of brown phase.

*Young (full-grown).*—Head (except lores and chin), neck, back, and rump plain cinnamon or sayal brown; lores and chin dull white or buffy white, the former with conspicuous black bristly shafts; throat, foreneck, and upper chest plain cinnamon (rather lighter than color of pileum, hindneck, etc.); rest of under parts light cinnamon, regularly and rather broadly barred with brown; remiges and rectrices (if developed) as in adults.

*Nestling (small).*—Downy covering entirely uniform dull white.

*Adult male.*—Length (skins), 203–229 (212); wing, 153.5–172.5 (162.8); tail, 83–88 (85.4); culmen (from cere), 12–15 (13.9).<sup>a</sup>

*Adult female.*—Length (skins), 196–219 (211); wing, 154.5–160.5 (158.1); tail, 81.5–88 (83.6); culmen (from cere), 13.5–14.5 (14).<sup>b</sup>

Island of Porto Rico (Utuaodo; Mayagüez; Lares; Mameyes; Santa Catalina, El Yunque; Maricao).

*Strix nudipes* DAUDIN, *Traité d'Orn.*, ii, 1800, 199 (Porto Rico; "Cayenne").—  
VIEILLOT, *Ois. Am. Sept.*, i, 1807, 45, pl. 16 (Porto Rico; "St. Domingue");  
Nouv. Dict. d'Hist. Nat., vii, 1817, 33 (Porto Rico; "St. Domingue").—  
SHAW, *Gen. Zool.*, vii, 1809, 269 ("Cayenne").

*N[octua](?) nudipes* STEPHENS, *Shaw's Gen. Zool.*, xiii, pt. ii, 1825, 70 ("Cayenne").  
*Noctua nudipes* LESSON, *Traité d'Orn.*, 1831, 104 (Porto Rico).

*A[thene] nudipes* GRAY, *Gen. Birds*, i, 1844, 35.

*Athene nudipes* STRICKLAND, *Orn. Syn.*, i, 1855, 173.

*Syrnium nudipes* KAUP, *Jardine's Contr. Orn.*, 1852, 120 (Porto Rico; "St. Domingo"); *Trans. Zool. Soc. Lond.*, iv, pt. vi, 1859, 250.

*Gymnasio nudipes* BONAPARTE, *Rev. et mag. de Zool.*, 1854, 543.

*Gymnasio nudipes* SHARPE, *Cat. Birds Brit. Mus.*, ii, 1875, 149, part (Porto Rico).—  
CORY, *Auk*, iii, 1886, 469, part (synonymy; descr.); *Birds West Ind.*, 1889,  
192, part; *Cat. West Ind. Birds*, 1892, 10, 100, part (Porto Rico).—BOWDISH,  
*Auk*, xix, 1902, 362 (near Mayaguez, Porto Rico; habits, etc.).

[*Gymnasio*] *nudipes* CORY, *List Birds West Ind.*, 1885, 21, part (Porto Rico).—  
SHARPE, *Hand-list*, i, 1899, 297, part.

*Gymnoglaux nudipes* SCLATER and SALVIN, *Proc. Zool. Soc. Lond.*, 1868, 328, part  
(Porto Rico; crit.).—GUNDLACH, *Journ. für Orn.*, 1878, 158 (Porto Rico),  
164 (Porto Rico; crit.).—LAWRENCE, *Ibis*, 1878, 185 (Porto Rico; descr.).

[*Gymnoglaux*] *nudipes* SCLATER and SALVIN, *Nom. Av. Neotr.*, 1873, 117, part.

*G[y]mnoglaux*] *nudipes* LAWRENCE, *Ibis*, 1878, 187 (diagnosis).

[*Scops*] *nudipes* (not *Bubo nudipes* VIEILLOT) GRAY, *Hand-list*, i, 1869, 47, no. 496.

[*Gymnoglaux*] *nudipes* LAWRENCE, *Ann. Lyc. N. Nat. Hist. N. Y.*, vii, 1860, 258.

*Gymnoglaux krugii* GUNDLACH, *Journ. für Orn.*, xxii, July, 1874, 310 (characterized  
on p. 315) (Porto Rico).—CABANIS, *Journ. für Orn.*, 1875, 223 (Porto Rico;  
again characterized).

*G[y]mnoglaux*] *krugii* [SALVIN and SCLATER], *Ibis*, 1878, 187, in text.

<sup>a</sup> Eight specimens.

<sup>b</sup> Four specimens.



## GYMNASIO NUDIPES NEWTONI (Lawrence).

## NEWTON'S BARE-LEGGED OWL.

Similar to *G. n. nudipes*, but color of upper parts lighter and more grayish brown and under parts more sparsely and less heavily streaked and vermiculated.

*Adult*.—Length (skins), 205–209 (207); wing, 145.5–162.5 (157.9); tail, 79.5–88 (83.1); culmen (from cere), 13.5–14.5 (13.8).<sup>a</sup>

Island of St. Thomas, St. Johns, and St. Croix,<sup>b</sup> Greater Antilles.

*Gymnasio nudipes* (not *Strix nudipes* Daudin) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 114, part (St. Johns; St. Croix).—CORY, Auk, iii, 1886, 469, part; Birds West Ind., 1889, 192, part; Cat. West Ind. Birds, 1892, 10, 100, part (St. Thomas; St. Johns; St. Croix).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 130 (St. Thomas).

[*Gymnasio*] *nudipes* CORY, List Birds West Ind., 1885, 21, part (St. Johns; St. Croix).

*Gymnoglaux nudipes* (not *Strix nudipes* Daudin) NEWTON (A. and E.), Ibis, 1859, 64, pl. 1 (St. Croix; habits; crit.), 307 (St. Johns; crit.).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 374 (St. Thomas; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 328, part (St. Thomas; St. Croix; crit.)

*Gymnoglaux newtoni* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1860, 259 (St. Croix, Greater Antilles; based on Ibis, 1859, pl. 1); Ibis, 1878, 115 (St. Croix; St. Thomas; descr.).

*G[ymnoglaux] newtoni* LAWRENCE, Ann. N. Y. Lyc., 1878, 187 (diagnosis).

## GYMNASIO LAWRENCII (Sclater and Salvin).

## CUBAN BARE-LEGGED OWL.

Tarsus entirely naked, except extreme upper anterior portion; back and wing-coverts with conspicuous white spots; under parts without transverse vermiculations.

*Adults (sexes alike)*.—Above olive-brown without bars or vermiculations, but with the back, scapulars, and wing-coverts spotted with white, these spots usually large, conspicuous, and approaching a rounded form but sometimes smaller, partially concealed, and of irregular shape; secondaries with more or less distinct lighter cross-bands, the primaries with large, roundish spots of pale dull buff or dirty white; tail dull brown, usually with indications of several narrow paler bands, but sometimes entirely uniform on upper surface; "eyebrow" (superciliary region) and lower part of face dull pale brownish buff or dirty white, the orbital and auricular regions darker; under parts usually pale brownish buff or dull white (rarely pure white), each feather with a distinct mesial stripe of brown, these stripes sometimes linear, more often lanceolate, but occasionally

<sup>a</sup> Four specimens from St. Thomas, sex undetermined.

<sup>b</sup> I have seen specimens from St. Thomas only; but judging from the colored plate in *The Ibis* (1859, pl. 1), the St. Croix birds seem to agree in coloration with those from St. Thomas.

T-shaped by reason of narrow brown tips to the feathers; bill light yellowish horn color (in dried skins); legs and feet light yellowish brown (in dried skins).

*Adult male*.—Length (skins), 190–209 (199); wing, 142.5–151 (147.9); tail, 70.5–84.5 (80.1); culmen (from cere), 13–15 (14.1).<sup>a</sup>

*Adult female*.—Length (skins), 184–214 (194); wing, 135–155 (144); tail, 72–88 (76); culmen (from cere), 12.5–14.5 (13.6).<sup>b</sup>

Island of Cuba (Baracoa; Guamá; El Guamá; Jiquarie los Negros; Remédios; San Francisco de Morales; Boyate; Figuabas) and Isle of Pines (Pasadita; Santa Sevilla).

*Noctua nudipes* (not *Strix nudipes* Daudin) LEMBEYE, Aves de la Isla de Cuba, 1850, 23, pl. 4, fig. 2.

*Gymnoglaux nudipes* CABANIS, Journ. für Orn., 1855, 465 (Cuba).—ALBRECHT, Journ. für Orn., 1861, 202 (Cuba).—GUNDLACH, Journ. für Orn., 1861, 404 (Cuba); 1871, 376 (Cuba; crit.; habits); Repert. Fisico-Nat. Cuba, i, 1865, 226.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 259 (Cuba; synonymy; descr.; crit.).

[*Gymnoglaux*] *nudipes* GUNDLACH, Journ. für Orn., 1861, 324 (Cuba).

*Ephialtes nudipes* BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306 (Cuba).

*Scops asio* (not *Strix asio* Linnæus) HARTLAUB, Naumannia, ii, 1852, 52 (Cuba).—GUNDLACH, Journ. für Orn., 1855, 465 (Cuba); 1861, 403 (Cuba; crit.).

*Gymnoglaux lawrencii* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 327, 328, pl. 29 (Remedios, Cuba; coll. U. S. Nat. Mus.).—LAWRENCE, Ibis, 1878, 186 (Cuba; descr.).

[*Gymnoglaux*] *lawrencii* LAWRENCE, Ibis, 1878, 187.

[*Gymnoglaux*] *lawrencii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.

[*Scops*] *lawrencii* GRAY, Hand-list, i, 1869, 47, no. 497.

*Gymnasio lawrencii* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 150.—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 130.—CORY, Cat. West Ind. Birds, 1892, 128.

[*Gymnasio*] *lawrencei* CORY, List Birds West Ind., 1885, 21 (Cuba).

*Gymnasio lawrencei* CORY, Auk, iii, 1886, 469; Birds West Ind., 1889, 192; Cat. West Ind. Birds, 1889, 192; Cat. West Ind. Birds, 1892, 10, 100.—MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 22 (Figuabas, e. Cuba).

[*Gymnasio*] *lawrencei* SHARPE, Hand-list, i, 1899, 297.

*Gymnasio lawrencei* BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 202 (Isle of Pines, Cuba; habits; crit.).

*Gymnasio lawrencei exsul* BANGS, Proc. New England Zool. Club, iv, March 31, 1913, 91 (Santa Sevilla, Isle of Pines; Bangs Coll., Mus., Comp. Zool.).

<sup>a</sup> Eight specimens.

<sup>b</sup> Six specimens.

Locality.			
MALES.			
Six adult males from Cuba.....	148.1	79.5	14.2
Two adult males from Isle of Pines.....	147.5	81.7	14
FEMALES.			
Five adult females from Cuba.....	141.8	74.5	13.5
One adult female from Isle of Pines.....	155	83.5	14

## Genus OTUS Pennant.

*Otus a* PENNANT, Indian Zoology, 1769, 3. (Type, by monotypy, *O. bakkamæna* Pennant. See Stone, Auk, xxiv, 1907, 192; Allen, Bull. Am. Mus., xxiv, 1908, 22.)

*Scops* (not of Brunnich, 1772) SAVIGNY, Descr. de l'Egypte, i, livr. 1, 1809, 107, 291. (Type, *S. ephialtes* Savigny=*Strix scops* Linnæus.)

*Ephialtes* (not of Schranck, 1802) KEYSERLING and BLASIUS, Wirb. Eur., 1840, p. xxxiii. (Type, *Strix scops* Linnæus.)

*Pisorhina* KAUP, Isis, 1848, 769. (Type, *Scops manadensis* Quoy and Gaimard.)

*Megascops* KAUP, Isis, 1848, 769. (Type, *Strix asio* Linnæus.)

*Acnemis* KAUP, Isis, 1848, 769. (Type, *Scops gymnopus* GRAY.)

*Ptilopsis* KAUP, Isis, 1848, 769. (Type, *Strix leucotis* Temminck.)

*Lempijijs* BONAPARTE, Rev. et Mag. de Zool., vi (2), 1854, 542. (Type, *Otus semitorquatus* Schlegel.)

*Zorca* S. D. W., Analyst, ii, no. xvi, Jan., 1836, 200. (Type, *Z. arborea* S. D. W. = *Strix scops* Linnæus.)

*Scototheres b* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 249. (New name for *Lempijijs* Bonaparte, on grounds of purism.)

*Psilosops c* COUES, Osprey, iii, May (pub. June 10), 1899, 144. (Type, *Scops flammeola* Kaup.)

Small Bubonidæ (wing less—usually much less—than 180 mm.) with more or less conspicuous ear-tufts; tarsus with at least upper half feathered (usually feathered to base of toes, sometimes on toes also) and ear-orifice relatively small, symmetrical, without dermal flap.

Bill relatively moderately large to rather small; top of cere decidedly shorter than chord of culmen, ascending and slightly arched basally. Nostril roundish or broadly oval, opening in anterior edge of the laterally inflated cere. Wing large, with longest primaries extending considerably beyond longest secondaries; fifth to eighth<sup>d</sup> primaries longest, the tenth (apparent outermost) shorter than fifth,<sup>e</sup> sometimes shorter than secondaries; two to four outer primaries with inner webs emarginated or sinuated. Tail relatively short (less than half as long as wing), slightly rounded; rectrices 12. Tarsus slightly longer than middle toe with claw, densely feathered for at least upper half, usually for entire length; upper side of toes sometimes wholly naked, sometimes covered (except on terminal phalanx) with bristles, more rarely clothed with short hair-like feathers. Head with more or less conspicuous ear-tufts.

*Coloration*.—Upper parts either conspicuously variegated with brown, dusky, and whitish, grayish, or buffy, or else mostly nearly uniform rufous; outer web of exterior scapulars mostly white, buffy,

<sup>a</sup> *Ὠτός*, a horned owl. (Richmond.)

<sup>b</sup> *Σκότος*, darkness; *θηράω*, I hunt. (Richmond.)

<sup>c</sup> *Ψῖλος*, bare, smooth; *σκῶψ*, a small owl. (Richmond.)

<sup>d</sup> Third to sixth when counted from outside, not including the rudimentary and concealed eleventh (first) primary.

<sup>e</sup> Sixth from outside.



or ochraceous, usually with a blackish margin; under parts mostly whitish, vermiculated, barred, or otherwise variegated with brown, gray, or rufous, often with black streaks and bars. Many of the species "dichromatic," that is, having two very distinct phases of plumage, wholly independent of age, sex, or season—a grayish or brownish, conspicuously variegated plumage (which may be regarded as the normal one) and a more uniform bright rufescent one.

*Range*.—Nearly cosmopolitan, but wanting in Australia, New Guinea, New Zealand, Polynesia, West Indies (?), and colder regions. (About eighty species and subspecies, of which about twenty-five are American and only one European.)

Among the many species generally referred to this genus which have been examined in the present connection are variations in external characters which strongly indicate the necessity of dividing the group into two or more genera; but in the absence of many species, some of which are types of generic names (among them the type of *Otus* itself) any attempt at subdivision under the circumstances would necessarily be premature and futile. Thus, among the species examined, *O. scops* (Linnaeus) is the only one in which the eighth and ninth primaries are longest, the tenth (apparent outermost) equal to or longer than the sixth, and only two outer primaries sinuated on the inner web. Superficially, this species much resembles *O. flammeolus*, especially in its small size and completely naked toes, but the latter has the seventh and eighth primaries longest, the tenth (apparent outermost) not longer than the fifth, four outer primaries sinuated on inner web, and the ear-tufts very short and inconspicuous, instead of the reverse. The wings are relatively much longer in *O. scops*, extending, when closed, beyond the tip of the tail, and the primaries are relatively narrower and straighter distally. Again, in *O. nudipes* the tarsi are naked for almost as great an extent as in the genus *Gymnasio*, to the species of which genus there is indeed a closer general resemblance than to the other American species of *Otus*, except in the possession of distinct ear-tufts, which are wanting in *Gymnasio*.

In a "Review of the American Species of the Genus *Scops*, Savigny,"<sup>a</sup> the writer has remarked the extreme difficulty of attaining a correct understanding of the specific and subspecific limits of the members of this genus. This is owing to the circumstance that not only is the individual variation in any form very considerable, but the matter is further complicated by the condition of dichromatism which affects the majority of the species, the two phases of one form (occurring in birds from the same locality, and quite independent of sex, age, or season) being far more different from each other than are corresponding phases of distinct species. In the main, geographic

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<sup>a</sup> Proc. U. S. Nat. Mus., i, 1878, 85-117.

variations are more or less marked and constant; but occasionally specimens occur in a given area which are with difficulty, if at all, distinguishable from the form inhabiting another—sometimes distant—geographic area. When to these perplexities are added the difficulty of conveying by means of description a clear idea of the coloration of any particular form on account of the confused pattern of coloration, which consists largely of fine vermiculations, zigzag lines “herring-bones,” etc., the matter of satisfactorily describing the differential characters of allied forms becomes peculiarly difficult.

Indeed, few groups of birds present greater perplexities to the systematist than the present one, chiefly on account of the difficulty of bringing together sufficient material to satisfactorily illustrate the extent of geographic and individual variations. Some species are very uniform in their color characters throughout a vast extent of territory; for example, *O. choliba*, which from Paraguay and southern Brazil to Costa Rica seems to be everywhere practically the same. On the other hand, other species, like *O. asio*, change remarkably in coloration within relatively short distances, their organization being so sensitive to conditions of environment that often relatively small contiguous areas of only slightly different physical character are characterized by recognizably different forms. When a study of these owls is attempted with scant material, that is, specimens from widely scattered localities and few, often only one, from each, the impression is received of excessive individual variation of one widely distributed form. This has especially been the case with the bare-toed group, containing forms related, more or less closely, to *O. choliba*; and some thirty-five years ago, when the writer prepared his “Review of the American Species of the Genus Scops, Savigny,”<sup>a</sup> this view was adopted, even *O. cassini* being referred to *O. choliba* as a subspecies. Although material for the study of this group has not increased very greatly even after the lapse of so many years, there has nevertheless been added to collections enough specimens to show clearly that the view formerly held (and, to a certain extent, held as late as 1897 by the authors of the *Biologia Centrali-Americana*, Aves, (iii, pp. 15, 21, 22), is incorrect, and that not only are the variations noted to a great extent geographical but that often two so-called “styles of plumage” found among specimens from the same country (sometimes even from the same locality) in reality represent distinct species. Thus, in the vast extent of South America inhabited by *O. choliba* are a number of other forms, several of which are undoubtedly specifically distinct, and in Costa Rica and Panama that species is associated with *O. vermiculatus*; and in the State of Vera Cruz the large and relatively light colored *O. guatemalæ*

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<sup>a</sup> Proc. U. S. Nat. Mus., i, 1878, 85–117.

is found in the same places as the very small and darker colored *O. cassini*, the former extending across the range of *O. hastatus*, or at least apparently separating the ranges of the two forms of that species in Oaxaca, though the range of *O. hastatus* may prove to be not interrupted, but continuous from Sinaloa to Yucatan. Likewise, in northern and central Mexico, we have in the same or closely contiguous localities, *O. trichopsis*, *O. pinosus*, *O. vinaceus*, and a form of *O. asio*, representing the bristly-toed group.

It should be emphasized that very much more material from different parts of Mexico and Central America is needed before a really correct understanding of the status and relationships of the several forms can be obtained.

KEY TO THE SPECIES AND SUBSPECIES OF OTUS.<sup>a</sup>

- a. General color of upper parts mottled or vermiculated grayish or brownish.
- b. Toes bristled.
  - c. Basal portion of toes feathered or densely bristled, the feathering of lower portion of tarsus not ending abruptly.
  - d. Outer webs of exterior row of scapulars mostly white, not broken by mottling, vermiculations, or bars; whitish spots on proximal half of longer primaries nearly to quite as broad as (sometimes broader than) the darker interspaces; legs, if not immaculate, coarsely mottled or barred.
  - e. Middle toe, measured from angle between middle and outer toes, not less than 15 mm.; bristly tips to feathers of face slightly developed; coloration of occiput and lower hindneck practically uniform with that of crown and back; black streaks on upper and under parts relatively narrower. (*Otus asio*.)
  - f. Eastern forms, conspicuously dichromatic (a grayish and a clear cinnamon-rufous phase).
    - g. Darker, with under parts more thickly penciled.
      - h. Smaller (wing averaging less than 145 in male, less than 152 in female). (Lower Austral Zone, west to northeastern Texas.)  
*Otus asio asio* (p. 687).
      - hh. Larger (wing averaging more than 160 in male, more than 165 in female).
        - i. Paler and smaller (wing averaging 160.2 in male); under parts less heavily penciled. (Upper Austral and Transition zones, east of the Great Plains.).....*Otus asio nævius* (p. 690).
        - ii. Darker and larger (wing averaging 164.2 in male); under parts more heavily penciled. (Northeast-central Texas.)  
*Otus asio hasbroucki* (p. 694).
    - gg. Paler, with under parts more openly penciled. (Lower Rio Grande Valley of Texas and northeastern Mexico.)  
*Otus asio mcallii* (p. 693).
  - ff. Western forms, not conspicuously, if at all, dichromatic (no rufous phase).
    - g. Larger (wing averaging 160 or more in male, more than 166 in female); vermiculations coarser and less dense, both above and below.
    - h. Wing averaging less than 162 in males, less than 172 in females.

<sup>a</sup> One species, *O. pinosus* Nelson, is not included in the key, the only known specimen being a young bird.



- i. Coloration less brownish above; penciling of under parts heavier but more sparse. (Eastern Colorado to Durango.)

*Otus asio aikenii* (p. 695).

- ii. Coloration more brownish above; penciling of under parts finer and denser. (California.).....*Otus asio bendirei* (p. 701).

- hh. Wing averaging more than 168 in male, more than 174 in female.

- i. Wing averaging less than 170 in males, less than 176 in females.

- j. Darker than *O. a. bendirei*. (Western Oregon.)

*Otus asio brewsteri* (p. 700).

- jj. Much the palest of all forms, with much white. (Eastern Colorado to eastern Montana.).....*Otus asio maxwelliae* (p. 696).

- ii. Wing averaging more than 176 in males, more than 179 in females.

- j. Grayer and slightly larger (wing averaging 177.8 in male, 186.3 in female); not dichromatic (no brown phase). (Western Montana to northeastern California, eastern Oregon, eastern Washington, and southeastern British Columbia.)

*Otus asio macfarlanei* (p. 697).

- jj. Browner and slightly smaller (wing averaging 176.5 in male, 179.2 in female); dichromatic (a tawny-brown phase). (Northwestern Washington to southern Alaska, near coast.)

*Otus asio kennicottii* (p. 698).

- gg. Smaller (wing averaging less than 155 in male, less than 157 in female); vermiculations finer and denser, both above and below.

- h. Larger (wing averaging 152.6 in male, 156.5 in female); toes more densely feathered. (Southwestern New Mexico to southeastern California and northern Sonora.)...*Otus asio cineraceus* (p. 702).

- hh. Smaller (wing averaging 144.9 in male, 149.7 in female); toes more scantily feathered. (Southern Lower California.)

*Otus asio xantusi* (p. 703).

- cc. Middle toe, measured from angle between middle and outer toes, not more than 14 mm.; bristly tips to feathers of face greatly developed; occiput and lower hindneck with pale buffy spots, forming two more or less distinct broken bands, interrupting general color of upper parts; black streaks on upper and under parts relatively much broader. (Southern Arizona to Guatemala.).....*Otus trichopsis* (p. 704).

- dd. Outer webs of exterior scapulars mostly pale buffy, broken distally by dusky vermiculation or mottling; pale grayish buff spots on proximal half of longer primaries decidedly narrower than darker interspaces; legs finely mottled or vermiculated. (State of Chihuahua, northwestern Mexico.).....*Otus vinaceus* (p. 708).

- cc. Basal portion of toes scantily bristled, the feathering on lower portion of tarsus ending abruptly. (Costa Rica to southern Mexico.)...*Otus cooperi* (p. 710).

- bb. Toes wholly and absolutely naked.

- c. Outermost primary shorter than secondaries; tail nearly if not quite half as long as wing, usually more than half as long; ear-tufts well developed; iris yellow.

- d. Toes alone, or together with only extreme lower part of tarsus, naked; smaller (wing averaging less than 193).

- e. Tail more than half as long as wing; tarsus feathered to base of toes or else (*O. barbarus*) size very small (wing 129 in male, 135.9-144 in female), and fine bristly tips to feathers of face greatly developed.

- f. Tarsus densely feathered to base of toes; bristly tips to feathers of face slightly or moderately developed; wing averaging at least 142 in male, at least 151 in female.

- g.* Larger and paler (wing averaging 153 or more in male, 157 or more in female).
- h.* Under parts with pencilings of very regular "herring-bone" pattern, the mesial black streaks very distinct; upper parts more streaked than spotted; larger (wing averaging 170.9 in male, 172.1 in female). (Costa Rica to Paraguay, southern Brazil, etc.).  
**Otus choliba** (p. 711).
- hh.* Under parts with pencilings irregular, with mesial black streaks less distinct (or if distinct much less regular), often indistinct or obsolete; upper parts more spotted than streaked; smaller (wing averaging less than 160 in males, less than 171 in females).
- i.* Darker and browner, with general coloration more uniform; face brown; larger (wing averaging 170.2 in female). (Vera Cruz, southeastern Mexico, to Guatemala.)...**Otus guatemalæ** (p. 715).
- ii.* Paler and less brownish, with general coloration less uniform; face dull whitish; smaller (wing averaging less than 160 in female). (*Otus hastatus*.)
- j.* Less buffy brown above, and more densely vermiculated beneath; smaller (wing averaging 153 in male, 157 in female). (Western Mexico.).....**Otus hastatus hastatus** (p. 718).
- jj.* More buffy brown above, less densely vermiculated beneath; larger (wing averaging 159.2 in female). (Yucatan.)  
**Otus hastatus thompsoni** (p. 719).
- gg.* Smaller and darker (wing averaging 142 in male, 151 in female). (Highlands of Vera Cruz, eastern Mexico.)...**Otus cassini** (p. 720).
- ff.* Tarsus not feathered to base of toes, the extreme lower portion being naked; fine bristly tips to feathers of face greatly developed; wing 129 in male, averaging 142 in female. (Highlands of Guatemala.)  
**Otus barbarus** (p. 723).
- ee.* Tail less than half as long as wing; lower portion of tarsus naked; coloration more uniform, usually without distinct spots above or below, the vermiculations finer). (Costa Rica to Panama.)  
**Otus vermiculatus** (p. 724.)
- dd.* Lower third, or more, of tarsus naked; larger (wing averaging 183). (Costa Rica and Panama; Colombia?).....**Otus nudipes** (p. 727).
- cc.* Outermost primary longer than secondaries; tail much less than half as long as wing; ear-tufts short, almost rudimentary; iris brown. (Highlands of Guatemala north to Idaho and southern British Columbia.)  
**Otus flammeolus** (p. 728).
- aa.* General color cinnamon-rufous or chestnut-rufous.
- b.* Toes with bristles.
- c.* Bristly tips to feathers of face slightly developed; middle toe (measured from angle between middle and outer toes) not less than 15 mm. (*Otus asio*.)
- d.* Smaller (wing averaging less than 156 in male, less than 158 in female).
- e.* Darker; wing averaging 144.7 in male, 151.3 in female.  
**Otus asio asio** (p. 688).
- ee.* Paler; wing averaging 155.2 in male, 157 in female.  
**Otus asio mcallii** (p. 693).
- dd.* Larger (wing averaging more than 160 in male, more than 165 in female).  
**Otus asio nævius** and **Otus asio hasbroucki** <sup>a</sup> (pp. 690, 694).

<sup>a</sup> With only one specimen of the rufous phase of *O. a. hasbroucki* I am not able to state the differences (if any there be) between that and the same phase of *O. a. nævius*.

cc. Bristly tips to feathers of face greatly developed; middle toe (measured from angle between middle and outer toes) not more than 14 mm.

*Otus trichopsis* (p. 705).

bb. Toes without bristles (entirely naked).

c. Tarsus densely feathered to base of toes; tail more than half as long as wing.

d. Smaller (wing averaging 142 in male, 151 in female); under parts broadly streaked with black and broadly barred with blackish and rusty.

*Otus cassini* (p. 721).

dd. Larger (wing averaging 158.7 or more in males, more than 170 in females); under parts narrowly (if at all) streaked with black, and narrowly barred or vermiculated with blackish or rusty.

e. Face whitish, rusty only on orbital region; bars on under parts more regular, mostly blackish.....*Otus choliba* (p. 712).

cc. Face wholly deep rusty or cinnamon-rufous (only the eyebrows sometimes whitish); bars on under parts irregular, more dense, mostly rusty.

*Otus guatemalæ* (p. 717).

cc. Tarsus with lower portion naked; tail less than half as long as wing. (In coloration like *O. guatemalæ* but color darker and more uniform, with eyebrows never (?) whitish.).....*Otus vermiculatus* (p. 725).

### OTUS ASIO ASIO (Linnæus).

#### FLORIDA SCREECH OWL.

##### *Gray phase.*

*Adults (sexes alike).*—Above brownish gray to grayish brown (mouse-gray to nearly cinnamon-drab) finely mottled and vermiculated with black or dusky, each feather with an irregular mesial streak, or chain of small spots connected along shaft, of the same; inner webs of ear-tufts coarsely mottled with grayish white, brownish white, or pale buffy; outer webs of exterior scapulars mostly dull white to light buff, tipped and narrowly margined with blackish; across occiput or upper nape a more or less distinct indication of a lighter colored band, in the form of irregular grayish white or buffy spots, and across lower hindneck often another of buffy (mostly concealed) spots; secondaries crossed by several narrow bands of paler buffy grayish or pale dull buffy, each enclosing an irregular dusky bar or transverse spot of dusky, the general color, however, so broken by mottlings that the bands are sometimes indistinct; outer webs of outermost middle and greater coverts with a large terminal or subterminal spot of white or pale buffy; outer webs of inner (proximal) primaries with quadrate spots of lighter cinnamon-drab, these becoming larger and paler toward the outermost, being largest and palest (more whitish) on the three or four longest primaries; tail crossed by seven or eight irregular, more or less broken, narrow bands of lighter grayish brown or cinnamon-drab; face dull grayish white, with an area of deep, more or less mottled or vermiculated, brown immediately above eye; "eyebrow" (superciliary region), auricular region, and suborbital region narrowly barred with



dusky, the feathers of loreal region not distinctly (if at all) barred but with conspicuously black shafts and bristly tips; facial rim or border mostly black, especially from behind ears to sides of throat; chin dull white; throat dull white, more or less tinged or suffused with pale cinnamon-buff to light cinnamon, narrowly barred and mesially streaked with black; a small area of immaculate dull white in center of fore-neck; median line of abdomen, together with anal region, immaculate buffy white; rest of under parts white (sometimes faintly tinged with pale buff), broken by a rather dense narrow irregular barring of black and broad mesial streaks of the same, these connected or confluent with the bars, and on sides of breast enlarged into conspicuous spots, which are often edged with light rusty or cinnamon; frequently, on sides and flanks, pairs of the black bars enclose a space of pale brown, or the bars themselves are more or less brownish; legs light cinnamon-buff, fading into dull whitish on lower and posterior portions of tarsi, the thighs nearly immaculate but the tarsi heavily barred with deep to dark brown, at least on upper portion; longer under tail-coverts with distal portion barred or spotted with black and light brown; under wing-coverts light buff, irregularly spotted and barred with brown and dusky on outer portion, especially on under side of carpo-metacarpal region; under primary coverts plain dark grayish brown or brownish gray with basal portion, abruptly, pale buff; under surface of outermost primaries dusky grayish brown or brownish gray, the inner primaries and secondaries with broad transverse spots of the same alternating with others of pale yellowish buff; bill pale grayish green or pale dull greenish blue in life; iris bright lemon yellow, the eyelids jet black; toes and basal portion of claws yellowish gray (in life), the terminal portion of claws dusky.

*Young*.—Remiges and rectrices as in adults; upper parts deep grayish brown, indistinctly and rather broadly barred with dusky, many of the feathers tipped with dull white; under parts dull white broadly barred with grayish dusky; no streaks on upper or under parts.

*Rufescent phase.*

*Adults (sexes alike)*.—General pattern of coloration much as in the gray phase, but the gray or brown everywhere replaced by bright cinnamon-rufous or chestnut-rufous (Kaiser brown), the upper parts without vermiculations and the blackish streaks narrower and linear; face plain light cinnamon-rufous, the superciliary and loreal regions whitish; under parts with pattern less intricate, the blackish or dusky bars of the gray phase replaced by transverse spots of cinnamon-rufous.

*Young*.—Similar to the young of the gray phase, but the grayish or grayish brown markings more or less distinctly rufescent.

*Adult male*.—Length (skins), 175–210 (198); wing, 139–151.5 (144.7); tail, 62.5–73.5 (66.7); culmen, from cere, 13–15 (13.7).<sup>a</sup>

*Adult female*.—Length (skins), 185–225 (206); wing, 144–162.5 (151.3); tail, 67–76.5 (71.3); culmen, from cere, 13.5–15.5 (14.3).<sup>a</sup>

Lower Austral Zone of eastern United States, from Florida and Gulf coast northward to South Carolina (probably to southeastern Virginia near coast), western Tennessee (Daniels), southern Illinois (Mount Carmel, Wabash County; Sugar Creek Prairie and Olney, Richland County; Tunnel Hill, Johnson County), southeastern Kansas (Neosho Falls; Cedar Valley), Oklahoma (Ponca Agency), Indian Territory (Red Fork), and Arkansas (Delight; Van Buren), probably also to southeastern Missouri, western Kentucky, and extreme southwestern Indiana; probably westward to northeastern Texas, near Gulf coast.

[*Strix asio*] LINNÆUS, Syst. Nat., ed. 10, i, 1758, 92 (South Carolina; based on *Noctua aurita minor*, *Little Owl*, Catesby, Nat. Hist. Carolina, i, 7, pl. 7; *Asio scops carolinensis* Brisson, Orn., i, 497); ed. 12, i, 1766, 132.—GMELIN, Syst. Nat., i, pt. 1, 1788, 287.—LATHAM, Index Orn., i, 1790, 54.

*Bubo asio* WAILES, Rep. Geol. Miss., 1854, 320 (Mississippi).

*B[ubo] asio* MAXIMILIAN, Journ. für Orn., 1858, 23 (New Harmony, Indiana; crit.).

*Scops asio* TAYLOR, Ibis, 1862, 128 (Florida).—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 338 (e. Florida).—HAY, Bull. Nutt. Orn. Club, vii, 1882, 93 (Big Black R., Mississippi).—BECKHAM, Bull. Nutt. Orn. Club, vii, 1882, 164 (Bayou Sara, Louisiana).

*Megascops asio* STOCKARD, Auk, xxii, 1905, 154 (Mississippi; nesting habits, etc.).

(?) *Strix navia* (not of Gmelin?) GOSSE, Alabama, 1859, 275 (Alabama).

*Scops mcCallii* (not of Cassin, 1854) CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 52, part (Indian R. Florida).

<sup>a</sup> Twelve specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
Nine adult males from Florida.....	143.5	65.6	14
One adult male from Louisiana.....	151.5	73.5	14
Two adult males from southern Illinois.....	146.7	68.7	12.5
Four adult males from central Illinois ( <i>O. a. naxvius</i> ).....	156.6	75.5	14
One adult male from north-central Kentucky ( <i>O. a. naxvius</i> ).....	163	77.5	15
Ten adult males from Maryland, District of Columbia, and Virginia ( <i>O. a. naxvius</i> ).....	160	75.4	15.3
One adult male from Long Island, New York ( <i>O. a. naxvius</i> ).....	157	77	14.5
One adult male from Rhode Island ( <i>O. a. naxvius</i> ).....	170	80	15.5
One adult male from New Hampshire ( <i>O. a. naxvius</i> ).....	170	82.5	15.5
FEMALES.			
Ten adult females from Florida.....	150	70.4	14.2
Two adult females from Louisiana.....	155	75.7	14.5
Four adult females from central Illinois ( <i>O. a. naxvius</i> ).....	162.1	78.8	15
One adult female from north-central Kentucky ( <i>O. a. naxvius</i> ).....	162.5	74.5	15
Eleven adult females from Maryland and District of Columbia ( <i>O. a. naxvius</i> ).....	166.5	79.5	15.6
One adult female from Carlisle, Pennsylvania ( <i>O. a. naxvius</i> ).....	169	80.5	15.5
One adult female from East Saginaw, Michigan ( <i>O. a. naxvius</i> ).....	176	80	14.5

- Scops asio*, var. *floridanus* RIDGWAY, Bull. Essex Inst., v., Dec., 1873, 200 (Indian R., Florida; coll. U. S. Nat. Mus.).
- [*Scops asio*] var. *floridanus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 48.
- Scops asio*, var. *floridana* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 51.
- [*Scops asio*.] Subsp.  $\beta$ . *Scops floridanus* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 118.
- [*Scops asio*] b. *floridanus* COUES, Birds Northwest, 1874, 303 (synonymy).
- [*Scops asio*]  $\delta$ . *floridanus* RIDGWAY, Proc. U. S. Nat. Mus., i, Aug. 15, 1878, 106, 107, 113 (monogr.).
- Scops asio floridanus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, special ed., iii, 1874, colored plate facing p. 51; Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 402a.—SCOTT, Bull. Nutt. Orn. Club, vi, 1881, 18 (Clearwater and mouth of Withlacoochee R., w. Florida; plumages).—COUES, Check List, 2d ed., 1882, no. 469.—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 33 (geog. range).
- S[co]ps a[sio] floridanus* COUES, Key N. Am. Birds, 2d ed., 1884, 506.
- Megascops asio floridanus* STEJNEGER, Auk, ii, April, 1885, 184.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 373a.—FISHER (A. K.), Auk, v, 1888, 111 (New Orleans, Louisiana).—SCOTT, Auk, ix, 1892, 212, 216 (Caloosahatchie R., Florida).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 358.—HASBROUCK, Auk, x, 1893, 251, 253 (geog. range).—WAYNE, Auk, x, 1893, 337 (Suwanee R., Florida).—BEYER, Proc. La. Soc. Nat. for 1897-'99 (1900), 100 (Louisiana).—WILLIAMS (R. W.), Auk, xxi, 1904, 455 (Leon Co., Florida).—ALLISON, Auk, xxi, 1904, 477 (Baton Rouge Parish, Louisiana).—KOPMAN, Auk, xxii, 1905, 142 (Jefferson Parish, Louisiana).—BEYER, ALLISON, and KOPMAN, Auk, xxv, 1908, 443 (Louisiana, common resident).
- M[egascops] asio floridanus* RIDGWAY, Man. N. Am. Birds, 1887, 261.
- Megascops asio floridana* ALLEN, Auk, v, 1888, 324 (Mandeville, Louisiana).
- Scops floridanus* GURNEY, Cat. Birds of Prey, 1894, 38.
- [*Scops*] *floridana* SHARPE, Hand-list, i, 1899, 288.
- Otus a[sio] floridanus* STONE, Auk, xx, July, 1903, 275.
- Otus asio floridanus* HOWELL (A. H.), Proc. Biol. Soc. Wash., xxi, April 11, 1908, 120 (Shreveport and Belcher, Louisiana).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 372; Check List, 3rd ed., 1910, 173.

### OTUS ASIO NÆVIUS (Gmelin).

#### SCREECH OWL.

Similar to *O. a. asio* but larger (wing averaging 160.2 in male, 166 in female) and coloration lighter, with under parts less densely or heavily penciled, in both phases.

*Adult male*.—Length (skins), 200–243 (216); wing, 145.5–170.5 (160.2); tail, 68–82.5 (76.4); culmen, from cere, 13–15.5 (14.9).<sup>a</sup>

*Adult female*.—Length (skins), 206–236 (223); wing, 160–176 (166); tail, 72.5–83 (79.2); culmen, 14.5–16 (15.3).<sup>b</sup>

Transition and Upper Austral zones of eastern North America; north to New Brunswick, Maine (Oxford County), New Hampshire

<sup>a</sup> Nineteen specimens.

<sup>b</sup> Eighteen specimens.



(Hampton), northern New York (Lewis County; Oneida County), Ontario (Hamilton; Ottawa; Toronto; Elmsdale; Point Pelee; Port Sydney; Cobalt Spring, Nipissing District), Michigan (East Saginaw; Ypsilanti Bayou), Wisconsin (Racine), and Minnesota (Becker County); south to uplands of Georgia, Alabama, Tennessee, northern Arkansas, central Illinois, etc.; west to or beyond the 100th meridian in South Dakota (Lyman County; Rosebud Reservation; Behrens), Kansas, etc.

[*Strix*] *naevia* GMELIN, Syst. Nat., i, pt. 1, 1788, 289 (New York; based on *Mottled Owl* Pennant, Arctic Zool., ii, 231; Latham, Synopsis Birds, i, pt. i, 126).—LATHAM, Index Orn., i, 1790, 55.

*Strix naevia* DAUDIN, Traité d'Orn., ii, 1800, 217.—SHAW, Gen. Zool., vii, 1809, 230.—WILSON, Am. Orn., iii, 1811, 17, pl. 19, fig. 1.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 125.

*S[trix] naevia* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 357; iv, pt. ii, 1825, 272; Obs. Wilson's Am. Orn., 1826, [17, 131].

*Asio naevia* LESSON, Man. d'Orn., i, 1828, 117.

[*Asio*] *naevius* BONAPARTE, Rev. et Mag. de Zool., 1854, 543.

*Otus naevius* CUVIER, Règne Anim., ed. 2, 1829, 241.

*Surnia naevia* JAMESON, ed. Wilson's Am. Orn., i, 1831, 96, 99.

*Ephialtes naevia* CASSIN, Proc. Ac. Nat. Sci. Phila., v, 1851, 236 (plumages).

*Scops naevia* HOY, Proc. Ac. Nat. Sci. Phila., vi, 1853, 306 (Racine, Wisconsin).

*Bubo striatus* VIEILLOT, Ois. Am. Sept., i, 1807, 54, pl. 21 (New York).

*Strix asio* (not of Linnæus) DAUDIN, Traité d'Orn., ii, 1800, 216, part.—TEMMINCK, Planch. Col., ii, 1838, pl. 80, and text.—SHAW, Gen. Zool., vii, 1809, 229, part.—WILSON, Am. Orn., v, 1812, 83, pl. 42, fig. 1.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 37.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 36; Synopsis, 1828, 36; Isis, 1832, 1139.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 99, in text.—JARDINE, ed. Wilson's Am. Orn., i, 1831, 307.—AUDUBON, Orn. Biog., i, 1831, 486, pl. 97; v, 1839, 392, part.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 120; 2d ed., 1840, 127.—BREWER, ed. Wilson's Am. Orn., 1852, 687.—CABOT, Journ. Bost. Soc. N. H., ii, 1838, 126 (plumages).—THOMPSON, Nat. Hist. Vermont, 1853, 64, fig.

*S[trix] asio* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 356; iv, pt. ii, 1825, 272; Obs. Wilson's Am. Orn., 1826, [17, 131].

*Bubo asio* VIEILLOT, Ois. Am. Sept., i, 1807, 53, pl. 21.—AUDUBON, Synopsis, 1839, 29; Birds Am., oct. ed., i, 1840, pl. 40.—DEKAY, Zool. N. Y., 1844, 25, pl. 12, figs. 25, 26.—GIRAUD, Birds Long Island, 1844, 28.

*Otus asio* STEPHENS, Shaw's Gen. Zool., xiii, pt. 2, 1826, 57.—SCHLEGEL, Fauna Japonica, 1845, 25, in text.—STONE, Auk, xx, 1903, 275.—FLEMING, Auk, xxiv, 1907, 74 (Toronto, Ontario, resident).—TAVERNER and SWALES, Wilson Bull., no. 60, 1907, 98 (Point Pelee, Ontario; habits; notes).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372.—VISHER, Auk, xxvi, 1909, 148 (Behrens, w. South Dakota, common).

*Otus asio asio* WETMORE, Condor, xi, 1909, 158 (near Lawrence, e. Kansas, common).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 172.

[*Otus asio asio*] SHERMAN, Auk, xxviii, 1911, 155–168 (nest-life).

*Asio asio* LESSON, Man. d'Orn., i, 1828, 117.

*Scops asio* LESSON, Traité d'Orn., 1831, 107.—BONAPARTE, Geog. and Comp. List, 1838, 6.—KAUP, Jardine's Contr. Orn., 1852, 112.—HOY, Proc. Ac. Nat. Sci. Phila., 1853, 306 (Racine, Wisconsin).—CASSIN, Illustr. Birds Calif.,

- Tex., etc., 1854, 179, part; in Baird, Rep. Pacific R. R. Surv., 1858, 51, part (not specimens mentioned).—STRICKLAND, Orn. Syn., i, 1855, 199.—BREWER, North Am. Oology, 1857, 65.—BAIRD, Cat. N. Am. Birds, 1859, no. 49.—BOARDMAN, Proc. Bost. Soc. N. H., ix, 1862, 123 (Maine).—VERRILL, Proc. Essex Inst., iii, 1862, 142 (Oxford Co., Maine, resident).—SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Oti), 1863, 26; no. 36 (Revue), 1873, 9.—McILWRAITH, Proc. Essex Inst., v, 1866, 82 (Hamilton, Ontario).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity of New York City).—MAYNARD, Naturalists' Guide, 1870, 131 (Massachusetts).—HARTING, Man. Brit. Birds, 1872, 93 (accidental in England).—COUES, Check List, 1873, no. 318, part; 2d ed., 1882, no. 465, part.—RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 49; Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 402, part.—SALVIN, Ibis, 1874, 314 (crit.).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 114 (Toronto, Ontario; Delaware).—BREWSTER, Ann. Lyc. N. Y., xi, 1875, 144 (Ritchie Co., West Virginia).—FRAZAR, Bull. Nutt. Orn. Club, ii, 1877, 80 (fish-eating habits).—MERRIAM, Bull. Nutt. Orn. Club, vi, 1881, 232 (Lewis Co., n. New York, breeding).—LANGDON, Journ. Vinc. Soc. N. H., v, 1882, 52, 53 (dichromatism in vicinity of Cincinnati, Ohio).—BICKNELL, Auk, ii, 1885, 260 (notes).
- [*Scops asio*] BONAPARTE, Consp. Av., i, 1850, 45.—GRAY, Hand-list, i, 1869, 46, no. 483.—COUES, Key N. Am. Birds, 1872, 202.—SHARPE, Hand-list, i, 1899, 288.
- [*Scops asio*] RIDGWAY, Ann. Lyc. N. Y., x, 1874, 379, part (Illinois).—COUES, Key N. Am. Birds, 2d ed., 1884, 505.
- [*phialtes*] *asio* GRAY, Gen. Birds, i, 1844, 38.
- Scops asio* GRAY, List Birds Brit. Mus., 1844, 44 (Delaware).—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuni and Col. R., 1853, 62, part (Indian Terr.).—CASSIN, Proc. Ac. Nat. Sci. Phila., v, 1851, 236 (plumages).
- [*Scops asio*] var. *asio* RIDGWAY, Bull. Essex Inst., v, Dec., 1873, 200, in text; in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 48, part.
- [*Scops asio*] a. *asio* COUES, Birds Northwest, 1874, 303, part.
- [*Scops asio*] α. *asio* RIDGWAY, Proc. U. S. Nat. Mus., i, Aug. 15, 1878, 106, 107, part (monogr.).
- Megascops asio* KAUP, Trans. Zool. Soc. Lond., iv, 1859, 228 (monogr.).—STEJNEGER, Auk, ii, 1885, 184.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 373.—RALPH and BAGG, Trans. Oneida Hist. Soc., iii, 1886, 121 (Oneida Co., New York, breeding).—BREWSTER, Auk, v, 1888, 389 (Winchendon, Massachusetts).—RIDGWAY, Orn. Illinois, i, 1889, 415, part.—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 354, pl. 12, fig. 8 (egg).—HASBROUCK, Auk, x, 1893, 251, 252 (geog. range; crit.).—CHADBOURNE, Auk, xiii, 1896, 321–325 (individual dichromatism); xiv, 1897, 33–39, pl. 1 (individual dichromatism).—FLEMING, Auk, xviii, 1901, 38 (Elmsdale and Port Sydney, n. w. Ontario).—WILSON (B. H.), Wilson Bull. no. 54, 1906, 4 (Scott Co., Iowa, common resident).—COOLIDGE, Auk, xxiii, 1906, 48 (young in captivity; account of mating).—JONES, Wilson Bull., no. 57, 1906, 115 (Cleveland, Ohio, common resident).—EHRIG, Auk, xxiii, 1906, 316 (Ottawa, Ontario, breeding).—HUBEL, Auk, xxiv, 1907, 50 (near Cobalt Lake, Nipissing district, Ontario).—LARSEN, Wilson Bull., no. 60, 1907, 114 (Lyman Co., South Dakota, resident).—ROBERTS, in Wilcox's Hist. Becker Co., Minnesota, 1907, 174 (resident).—PEET, Tenth An. Rep. Mich. Ac. Sci., 1908, 192 (Ypsilanti Bayou, Michigan, common resident).—REAGAN, Auk, xxv, 1908, 464 (Rosebud Reservation, South Dakota, common).—ISELY, Auk, xxix, 1912, 28 (Sedgewick Co., Kansas).
- M[egascops] asio* RIDGWAY, Man. N. Am. Birds, 1887, 261.

## OTUS ASIO MCCALLII (Cassin).

## TEXAS SCREECH OWL.

Larger than *O. a. asio*, but smaller than *O. a. nævius* and paler than either; gray phase much more coarsely mottled above than in any other form of the species, the lighter spots and mottlings decidedly more conspicuous; rufous phase paler than that of *O. a. asio*, with rufous predominating on under parts.

*Adult male*.—Length (skins), 200–226 (214); wing, 147–163.5 (155.2); tail, 72–81 (75.8); culmen, from cere, 13–14.5 (13.8).<sup>a</sup>

*Adult female*.—Length (skins), 208–240 (224); wing, 149–163 (157); tail, 74–81 (78.2); culmen, from cere, 13.5–14 (13.7).<sup>b</sup>

Southern Texas, north to Bandera, Bexar, Comal, and Refugio counties, west to Kinney County (Fort Clark); south into Tamaulipas (Ciudad Victoria; Rio Martinez; Santa Leonor) and Nuevo León (Topo Chico, Monteréy; Montemorelos; Rio Salada; Rio San Juan).

*Scops mcallii* CASSIN, Illustr. Birds Calif., Texas, etc., July, 1854, 180 (Rio Grande, Texas; coll. U. S. Nat. Mus. c); in Baird, Rep. Pacific R. R. Surv. ix, 1858, 52.—BAIRD, Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 4, pl. 1; Cat. N. Am. Birds, 1859, no. 50; Birds North Am., 1860, 50, atlas, pl. 39.

*S[cops] mcallii* COOPER, Orn. Calif., 1870, 421, in text (crit.).

*Megascops asio mcallii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 373b, part.—HASBROUCK, Auk, x, 1893, 251, 254, part (geog. range).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1892, 106 (near Corpus Christi, Texas).—ATTWATER, Auk, ix, 1892, 234 (San Antonio, Texas, common resident).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 360.

*M[egascops] asio mcallii* RIDGWAY, Man. N. Am. Birds, 1887, 261, part.

*Otus asio mcallii* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 372.

*Otus a[sio] mcalli* STONE, Auk, xx, July, 1903, 275.

*Otus asio mcalli* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 173.—PHILLIPS, Auk, xxviii, 1911, 77 (Rio Martinez and Santa Leonor, Tamaulipas).

*Megascops asio mcalli* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xvi, 1899, 109.—CARROLL, Auk, xxii, 1900, 343 (Refugio Co., Texas).

*[Scops] m'callii* GRAY, Hand-list, i, 1869, 47, no. 495.

*Scops maccalli* SCLATER, Proc. Zool. Soc. Lond., 1858, 133 (Texas; n. Mexico).—DRESSER, Ibis, 1865, 330 (San Antonio and Bandera Co., Texas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 18 (Rio Salada, Topo Chico, and Montemorelos, Nuevo Leon).

*[Scops] maccalli* SHARPE, Hand-list, i, 1899, 289.

<sup>a</sup> Ten specimens.

<sup>b</sup> Six specimens.

<sup>c</sup> Of the two specimens mentioned by Cassin in his original description, that in the collection of the Academy of Natural Sciences, Philadelphia, appears to have been lost, Mr. Stone having been unable to find it. The other is still in the National Museum collection and bears the following upon the original label: "Screech Owl. Rio Bravo del Norte, Sept. 9<sup>th</sup> '853. Schott." It is one of the U. S. and Mexican Boundary Survey specimens, and is number 9171 of the U. S. National Museum collection.



*Scops asio*, var. *maccalli* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 52, part (in synonymy only).—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 151 (Ft. Brown, Texas; descr. eggs).

[*Scops asio*.] Var. *maccallii* COUES, Key N. Am. Birds, 1872, 203.

[*Scops asio*] c. *maccallii* COUES, Birds Northwest, 1874, 303 (excl. syn. *Ephialtes choliba* Lawrence).

[*Scops asio*] β. *maccalli* RIDGWAY, Proc. U. S. Nat. Mus., i, Aug. 15, 1878, 106, 109, part α (monogr.).

*Scops asio maccalli* COUES and SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., iv, no. 1, 1878, 39 (Hidalgo, Texas).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 7, 191; Nom. N. Am. Birds, 1881, no. 402b.—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 33, part (lower Rio Grande Valley).—NEHRLING, Bull. Nutt. Orn. Club, vii, 1882, 192 (Houston, Texas).<sup>b</sup>

S[*cops*] a[*sio*] *maccalli* COUES, Key N. Am. Birds, 2d ed., 1884, 506.

*Megascops asio maccalli* STEJNEGER, Auk, ii, April, 1885, 184.

*Scops asio* . . . var. *maccallii* COUES, Check List, 1873, no. 318b.

*Scops enano* (not *Scops asio*, var. *enano* Lawrence) BREWER, Ibis, 1878, 488 (Ft. Brown, Texas).

*Scops asio enano* COUES and SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., v, 1879, 417 (Lomita Ranch, Texas).

*Megascops asio trichopsis* (not *Scops trichopsis* Wagler) AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 373b, part.

M[*egascops*] *asio trichopsis* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 261, part.

### OTUS ASIO HASBROUCKI Ridgway.<sup>c</sup>

#### HASBROUCK'S SCREECH OWL.

Similar in pattern of coloration to *O. a. maccallii* but decidedly larger, darker, and much less buffy gray above, and under parts much more heavily penciled, the transverse bars, especially, being much broader, as well as more numerous; mottling of legs much darker brown; rufescent phase similar to that of *O. a. naevius*.

*Adult male*.—Length (skins), 211–220 (215.5); wing, 165.5–166.5 (166); tail, 80.5–82 (81.2); culmen, from cere, 14–14.5 (14.2).<sup>d</sup>

North-central Texas, in Palo Pinto and Dallas counties; Gainesville, Cook County?; McLennan County?; Eastland County?; Lampasas County?

*Megascops asio maccallii* (not *Scops maccallii* Cassin) HASBROUCK, Auk, vi, 1889, 237 (Eastland Co., Texas); x, 1893, 254, part (geogr. range; Gainesville, Cook Co., Texas).

*Megascops asio trichopsis* (not *Scops trichopsis* Wagler) HASBROUCK, Auk, x, 1893, 257, part (Palo Pinto and Lampasas counties, Texas).

<sup>a</sup> All the specimens enumerated in table on p. 111 belong to *O. trichopsis*!

<sup>b</sup> Possibly *O. a. asio*.

<sup>c</sup> New subspecies. (Type, no. 153359, coll. U. S. Nat. Mus., Palo Pinto County, Texas, Sept. 9, 1888; E. M. Hasbrouck.)

<sup>d</sup> Two specimens from Palo Pinto County, Texas.

Two adults (sex not determined) from Dallas, Dallas County, one of them in rufous phase, measure as follows: Length (skins), 213–215 (214); wing, 161–164 (162.5); tail, 77–82 (79.5); culmen, from cere, 14–16 (15).

## OTUS ASIO AIKENI (Brewster).

## AIKEN'S SCREECH OWL.

Similar to *O. a. cineraceus* but larger, the upper parts more coarsely mottled or vermiculated and with blackish mesial streaks broader and more strongly contrasted with the general color; blackish pencilings of under parts heavier, rather less numerous. Smaller and much darker than *O. a. maxwelliæ*.

*Adult male*.—Length (skins), 195–214 (207); wing, 156–167 (160); tail, 74.5–84 (78); culmen, from cere, 12.5–14 (13.4).<sup>a</sup>

*Adult female*.—Length (skins), 220–250 (230); wing, 162–178 (171.2); tail, 81–95 (88.2); culmen, from cere, 14.5–15.5 (14.7).<sup>b</sup>

Foothills and plains of eastern Colorado (Greeley, Weld County; Colorado Springs, El Paso County; Beulah, Pueblo County; Fort Lyon, Bent County) southward through New Mexico (Fort Wingate; Vado; Mesa Jumanes) and western and central Texas (Tom Green County; Concho County; Kerrville, Kerr County; Juno, Valverde County; Terlingua, Brewster County) southward to northern Durango (Santuário; Rio Sestín);<sup>c</sup> southeastern Arizona (San Pedro River, Oct. 4) in migration?<sup>d</sup>

<sup>a</sup> Four specimens.		<sup>b</sup> Nine specimens.		
Locality.		Wing.	Tail.	Culmen, from cere.
MALES.				
Two adult males from New Mexico.....		163.5	80.7	13.7
One adult male from southwestern Texas (Brewster County).....		157	76	13.5
One adult male from northern Durango.....		156	74.5	12.5
FEMALES.				
Seven adult females from Colorado.....		172.7	90.1	14.9
Two adult females from northern Durango.....		165.7	81.7	14.2

A specimen from Juno, Valverde County, southwestern Texas, is not included in the above measurements on account of uncertainty as to its sex, which though determined as female is decidedly smaller in wing-measurment than any of the males examined, its measurements being as follows: Wing, 147; tail, 74.5; culmen, from cere, 14.

<sup>c</sup> The specimens from the State of Durango, north-central Mexico, are, so far as I am able to see, precisely like typical specimens of *O. a. aikenii* in coloration, and are not constantly smaller than some specimens from more northern localities, a female from Rio Sestín having the wing 169.5; tail, 82.5; and culmen, 14.5; while one from El Paso County, Colorado, measures 168.5, 91, and 15.5, while an alleged female from Valverde County, Texas, measures 147, 74.5, and 14, though, as stated above, this example is probably a male.

<sup>d</sup> A specimen from the San Pedro River, southeastern Arizona, obtained Oct. 4, 1873, is precisely like typical *O. a. aikenii* in coarseness or heaviness of black pencilings, and in this respect very different from any in a series of 24 examples of *O. a. cineraceus*. Whether it is a stray migrant of *O. a. aikenii* or an abnormal specimen of *O. a. cineraceus* is a question not easy to decide.

- Megascops asio mcallii* (not *Scops mcallii* Cassin) LLOYD, Auk, iv, 1887, 190 (Tom Green and Concho counties, west-central Texas).—HASBROUCK, Auk, x, 1893, 251, 254, part (geog. range).—(?) STONE, Proc., Ac. Nat. Sci. Phila., 1890, 128 (New Mexico).
- Megascops asio aikenii* BREWSTER, Auk, viii, April (separates pub. Feb. 17), 1891, 139 (Colorado Springs, Colorado; coll. W. Brewster).—BENDIRE, Life Hist. N. Am. Birds, i, 1892, 370 (Ft. Wingate, New Mexico; n. e. Arizona; etc.).—HASBROUCK, Auk, x, 1893, 251, 258 (geog. range).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xi, 1894, 46; Check List, 2d ed., 1895, no. 373g.—COOKE, Birds Col., 1897, 78 (range not clearly made out); Bull. 44, Col. Agric. Exp. Sta., 1898, 161 (Colorado Springs in summer only).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 164 (Santuario and Rio Sestin, n. w. Durango, breeding; crit.).
- M[egascops] asio aikenii* RIDGWAY, Man. N. Am. Birds. 2d ed., 1896, 592.
- Otus a[sio] aikenii* STONE, Auk, xx, July, 1903, 275.
- Otus asio aikenii* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 372; Check List, 3d ed., 1910, 173.—LACEY, Auk, xxviii, 1911, 208 (Kerrville, w. Texas, common resident; habits, etc.).
- Scops aikenii* GURNEY, Cat. Birds of Prey, 1894, 38.
- [*Scops*] *aikenii* SHARPE, Hand-list, i, 1899, 289.
- (?) *Scops asio* (not *Strix asio* Linnæus?) COOKE, Birds Col., 1897, 78 (Greeley and Arkansas R. near Ft. Lyon, Colorado).
- [*Scops asio*] *α. asio* RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 106, 107, part (San Pedro R., Arizona, Oct. 4.)
- Megascops asio trichopsis* MITCHELL, Auk, xv, 1898, 308 (San Miguel Co., New Mexico, breeding up to timber line).

### OTUS ASIO MAXWELLIÆ (Ridgway).

#### ROCKY MOUNTAIN SCREECH OWL.

Decidedly larger and very much paler than *O. a. aikenii*; nearly as large as *O. a. macfarlanei* and *O. a. kennicottii*, but conspicuously lighter in color than any other form, with the white purer and more extended and the colored parts paler; ground color above pale gray or grayish brown, relieved by the usual ragged mesial streaks of black and irregular mottlings and vermiculations of lighter and darker shades of grayish, the general color more rufescent, and no darker than very light ash gray or drab; white spots on outer webs of primaries frequently confluent along edge of quills, the darker spots sometimes hardly visible on proximal portion when wings are closed; under parts with pure white greatly predominating.

*Adult male*.—Length (skins), 215–240 (227); wing, 161.3–174 (168.2); tail, 76.2–85.5 (82.8); culmen, from cere, 15–16 (15.3).<sup>a</sup>

*Adult female*.—Length (skins), 232–248 (238); wing, 167.6–181 (175.7); tail, 83.8–101.6 (88.6); culmen, from cere, 15.2–16 (15.4).<sup>b</sup>

Foothills and plains from eastern Montana (Fort Custer; Butte County; Bridger Canyon, Gallatin County) and western South Dakota (Swan Creek, Walworth County) through Wyoming (Black

<sup>a</sup> Eight specimens.

<sup>b</sup> Eleven specimens.



Mountain; Greybull) to central Colorado (Denver; Berthoud; Loveland; Colorado Springs; Estes Park; Gold Hill, Boulder County; Fort Collins; Larimer County; Adams County; Wet Mountains; Dry Willow Creek, Yuma County).

*Scops asio* (not *Strix asio* Linnæus) RIDGWAY, Bull. Essex Inst., v, 1873, 185 (Colorado).

*Scops asio*, *ε. maxwelliæ* RIDGWAY, Field and Forest, ii, no. 11, May, 1877, 210, 213 (Boulder, Colorado; type now in coll. U. S. Nat. Mus.).

[*Scops asio*] *ε. maxwelliæ* RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 106, 107, 114 (monogr.).

*Scops asio maxwelliæ* ALLEN, Bull. Nutt. Orn. Club, v, April, 1880, 90.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 402c.

*Scops maxwelliæ* RIDGWAY, Field and Forest, ii, May, 1877, 214, in text.—GURNEY, Cat. Birds of Prey, 1894, 38.

[*Scops*] *maxwelliæ* SHARPE, Hand-list, i, 1899, 289.

*Scops asio maxwellæ* COUES, Check List, 2d ed., 1882, no. 467.—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 33 (geog. range).

S[*cops*] a[sio] *maxwellæ* COUES, Key N. Am. Birds, 2d ed., 1884, 506.

*Megascops asio maxwelliæ* STEJNEGER, Auk, ii, April, 1885, 184.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 373e.—BENDIRE, Auk, vi, 1889, 298 (geog. range; breeding habits; descr. nest and eggs); vii, 1890, 91 (Gold Hill, Boulder Co., Colorado; food); Life Hist. N. Am. Birds, (i), 1892, 363, pl. 12, fig. 10.—HASBROUCK, Auk, x, 1893, 251, 256 (geog. range).—LOWE, Auk, xi, 1894, 268 (Wet Mts., Colorado, 7,800 ft.).—COOKE, Birds Col., 1897, 78 (foothills to about 6,000 feet; breeding at Denver, Boulder, and Loveland); Bull. 44, Col. Agric. Exp. Sta., 1898, 160 (Colorado Springs in winter only).—CAMERON, Auk, xxv, 1908, 56 (Butte Co., Montana, breeding).

M[*egascops*] *asio maxwelliæ* RIDGWAY, Man. N. Am. Birds, 1887, 262.

*Megascops asio maxwellæ* ROCKWELL, Condor, ix, 1907, 140[145], cuts (n. e. Colorado; range, breeding habits, etc.).

*Otus a[sio] maxwelliæ* STONE, Auk, xx, July, 1903, 275.

*Otus asio maxwelliæ* METZ, Condor, x, 1908, 143-145 (n. Wyoming; nesting habits; 4 cuts).—SMITH (H. G.), Auk, xxv, 1908, 185 (Dry Willow Creek, Yuma Co., Colorado).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372; Check List, 3d ed., 1910, 173.—HERSEY and ROCKWELL, Condor, xi, 1909, 118 (Adams Co., Colorado, resident).—HENDERSON, Univ. Colo. Stud. Zool., vi, 1909, 230 (Plains and lower mountain district of Colorado, up to 9,000 feet).—COOKE, Auk, xxvi, 1909, 412 (Dry Willow Creek, Yuma Co., Colorado, breeding).—SAUNDERS, Auk, xxviii, 1911, 37 (Bridger Canon, Gallatin Co., Montana, July).—WIDMANN, Auk, xxviii, 1911, 312 (Estes Park, Colorado, July).

### OTUS ASIO MACFARLANEI (Brewster).

#### MAC FARLANE'S SCREECH OWL.

Larger and very much darker than *O. a. maxwelliæ*; similar in coloration to *O. a. bendirei* but much larger.

*Adult male*.—Length (skins), 225-250 (234); wing, 170-187.5 (177.7); tail, 78-90.5 (86.1); culmen, from cere, 14.5-15.5 (15.1).<sup>a</sup>

<sup>a</sup> Eight specimens.

*Adult female*.—Length (skins), 235–265 (250); wing, 179–193 (186.3); tail, 87.5–100 (93.4); culmen, from cere, 15.5–17.5 (16.3).<sup>a</sup>

Western Montana (Hellgate) westward through Idaho (Nez Perces Indian Reservation) to eastern Oregon (Camp Harney; John Day River; Malheur County), northeastern California (Fort Crook; Baird, Shasta County?), eastern Washington (Walla Walla; North Yakima; Rock Creek) and southern British Columbia east of Cascade Mountains (Okanogan; Penticton).

*Scops asio* (not *Strix asio* Linnæus) RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 49, part (Hellgate, Montana).

*Scops asio kennicotti* (not *Scops kennicottii* Elliott) ALLEN, Bull. Nutt. Orn. Club, vi, 1881, 128 (Walla Walla, e. Washington).—BENDIRE, Bull. Nutt. Orn. Club, vi, 1881, 185 (Walla Walla, e. Washington; descr. eggs).—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 28–31, part (Walla Walla; Hellgate, Montana; descr. supposed gray phase; crit.).

*M[egascops] asio kennicottii* RIDGWAY, Man. N. Am. Birds, 1887, 262, part (Hellgate, Montana).

(?) *Megascops asio kennicottii*? TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 203 (Baird and Ft. Crook, n. e. California).

*Otus asio kennicottii* BROOKS, Auk, xxvi, 1909, 61 (Okanogan, Brit. Columbia; crit.).

*Megascops asio macfarlanei* BREWSTER, Auk, viii, April (separates pub. Feb. 17), 1891, 140 (Walla Walla, e. Washington; coll. W. Brewster).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 371.—HASBROUCK, Auk, x, 1893, 251, 259 (Nez Perces Indian Reservation, Idaho; geog. range).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xi, 1894, 47; Check List, 2d ed., 1895, no. 373h.—SNODGRASS, Auk, xxi, 1904, 228 (Walla Walla Co., Washington).—KERMODE, Provincial Mus. Victoria, 1909, 46 (Brit. Columbia east of Cascade range).

*M[egascops] asio macfarlanei* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 592.

*Otus a[sio] macfarlanei* STONE, Auk, xx, July, 1903, 275.—PECK, Condor, xiii, 1911, 66 (Malheur Co., e. Oregon, breeding).

*Otus asio macfarlanei* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372; Check List, 3d ed., 1910, 174.

*Scops macfarlanei* GURNEY, Cat. Birds of Prey, 1894, 38.

[*Scops*] *macfarlanei* SHARPE, Hand-list, i, 1899, 289 (excl. syn. *saturatus* Brewster).

### OTUS ASIO KENNICOTTII (Elliott).

#### KENNICOTT'S SCREECH OWL.

Large, like *O. a. macfarlanei*, but coloration much darker and browner, the general tone of upper parts inclining, more or less strongly, to tawny-brown, with lighter markings brownish buff or pale cinnamon, the under parts more or less strongly suffused with pale cinnamon, the legs (especially thighs) light tawny; gray phase (which is relatively rare<sup>b</sup>) similar to *O. a. bendirei* and *O. a. macfarlanei* but very much darker (the general color of upper parts

<sup>a</sup> Six specimens.

<sup>b</sup> The gray phase is represented by only 1 among the 21 adults examined.

approaching fuscous) and with lighter markings light brownish buffy instead of white, and the under parts much more heavily penciled and spotted.

*Adult male*.—Length (skins), 220–252 (231); wing, 170.5–190.5 (176.5); tail, 82–98.5 (89); culmen, from cere, 14.5–16.5 (15.1).<sup>a</sup>

*Adult female*.—Length (skins), 225–253 (241); wing, 170.5–187.5 (179.2); tail, 85.5–93 (89.2); culmen, from cere, 14.5–16.5 (15.5).<sup>b</sup>

Western Washington (Mount Vernon; Lake Cushman; Fort Vancouver; Cape Disappointment; Bellingham Bay; Seattle; Tacoma) and northward, near coast, through British Columbia (Victoria, Errington, Comox, and Cadboro Bay, Vancouver Island; Savich Island; New Westminster; Chilliwack; Sumas) to southeastern Alaska (Sitka).

(?) *Strix asio* (not of Linnæus) TOWNSEND (J. K.), Journ. Ac. Nat. Sci. Phila., viii, 1839, 151.

*Scops asio* COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. 2, 1860, 155 (Ft. Vancouver, Washington).—LORD, Nat. in Vancouver Is., ii, 1866, 292.—BROWN, Ibis, 1868, 419 (Vancouver I.).

(?) *Strix navia* (not of Gmelin) TOWNSEND (J. K.), Journ. Ac. Nat. Sci. Phila., viii, 1839, 151.

*Scops kennicottii* ELLIOT, Proc. Ac. Nat. Sci. Phila., 1867, 69 (Sitka, Alaska; coll. U. S. Nat. Mus.); Illustr. New and Unfig. Birds N. Am., 1869, p. xxvii, pl. 11.

*Scops kennicotti* DALL and BANNISTER, Trans. Chicago Ac. Sci., i, pt. ii, 1869, 273 (Sitka).—BAIRD, Trans. Chicago Ac. Sci., i, pt. ii, 1869, 311, pl. 27.—COOPER, Orn. Calif., 1870, 423.—FINSCH, Abh. Nat. Bremen, iii, 1872, 28 (Sitka).

[*Scops*] *kennicotti* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 57.

[*Scops*] *kennicotti* GRAY, Hand-list, i, 1869, 47, no. 492.—SHARPE, Hand-list, i, 1899, 289.

[*Scops asio*] var. *kennicottii* COUES, Key N. Am. Birds, 1872, 203.

*Scops asio* . . . var. *kennicottii* COUES, Check List, 1873, no. 318a.

*Scops asio*, var. *kennicottii* RIDGWAY, Bull. Essex Inst., v, 1873, 201, in text.

*Scops asio*, var. *kennicotti* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 53.

[*Scops asio*] b. *kennicottii* COUES, Birds Northwest, 1874, 303.

[*Scops asio*] γ. *kennicottii* RIDGWAY, Proc. U. S. Nat. Mus., i, Aug., 15, 1878, 106, 111 (monogr.; Sitka; Washington; "Idaho").

*Scops asio kennicottii* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 191.

*Scops asio kennicotti* RIDGWAY, Nom. N. Am. Birds, 1881, no. 402d.—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 28–33, part (crit.; Sitka).—COUES, Check List, 2d ed., 1882, no. 466.—BOWLES, Condor, viii, 1906, 143 [144] (n. w. Washington; habits; descr. eggs).

[*Scops*] α[*sio*] *kennicotti* COUES, Key N. Am. Birds, 2d ed., 1884, 505.

[*Scops asio*.] Subsp. α. *Scops kennicotti* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 117 (Vancouver I.; "west side of Rocky Mts.').

*Megascops asio kennicotti* STEJNEGER, Auk, ii, April, 1885, 184.

*Megascops asio kennicottii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 373d, part.—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 151 (Sitka southward).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892,

<sup>a</sup> Nine specimens.

<sup>b</sup> Eight specimens.



- 363, part.—HASBROUCK, Auk, x, 1893, 251, 256 (geog. range).—KOBBE, Auk, xvii, 1900, 352 (Cape Disappointment, Washington, breeding).—RATHBUN, (S. F.), Auk, xix, 1902, 132 (Seattle, Washington, resident).—BOWLES, Auk, xxiii, 1906, 143 (Tacoma, Washington, resident).—EDSON, Auk, xxv, 1908, 433 (Bellingham Bay, Washington, resident).
- Megascops asio kennicottii* RIDGWAY, Man. N. Am. Birds, 1887, 262, part; 2d ed., 1896, 593.
- Otus a[sio] kennicottii* STONE, Auk, xx, July, 1903, 275.
- Otus asio kennicottii* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372, part.
- Otus asio kennicottii* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Check List, 3d ed., 1910, 173, part.—SWARTH, Univ. Calif. Pub. Zool., x, 1912, 30 (Errington).
- Megascops asio saturatus* BREWSTER, Auk, viii, April (separates pub. Feb. 17), 1891, 141 (Victoria, Brit. Columbia; coll. W. Brewster).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 373, part.—HASBROUCK, Auk, x, 1893, 251, 259, part (geog. range).
- Megascops asio saturatus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 593, part.

### OTUS ASIO BREWSTERI Ridgway.<sup>a</sup>

#### BREWSTER'S SCREECH OWL.

Similar to *O. a. kennicottii*, but smaller, and coloration much less brownish, the lighter markings on upper parts less pronouncedly buffy, the under parts much less (sometimes not at all) suffused with buff. (Intermediate between *O. a. kennicottii* and *O. a. bendirei*.)

*Adult male*.—Length (skins), 210–242 (229); wing, 166.5–174 (169.7); tail, 84–87.5 (85.6); culmen, from cere, 14.5–15.5 (15).<sup>b</sup>

*Adult female*.—Length (skins), 235–245 (240); wing, 169.5–176.5 (174.5); tail, 84.5–90 (88); culmen, from cere, 16–16.5 (16.3).<sup>c</sup>

Western Oregon (Portland; Salem; Beaverton; Marion County; Washington County; Roseburg, Douglas County).

*Scops asio kennicottii* (not *Scops kennicottii* Elliot) BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 28–33, part (Portland, Oregon).

*Megascops asio kennicottii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 373d, part.—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon).

*Megascops asio kennicottii* RIDGWAY, Man. N. Am. Birds, 1887, 262, part.

*Otus asio kennicottii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 173, part.

*Megascops asio saturatus* BREWSTER, Auk, iii, 1891, 141, part (Salem, Oregon).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 373, part (Washington and Marion Counties, Oregon).—HASBROUCK, Auk, x, 1893, 251, 253, part (geog. range).

*Megascops asio saturatus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1895, 593, part.

<sup>a</sup> New subspecies. (Type, no. 120014, coll. U. S. Nat. Mus., Salem, Oregon; W. Warner.)

<sup>b</sup> Five specimens.

<sup>c</sup> Three specimens.

## OTUS ASIO BENDIREI (Brewster).

## CALIFORNIA SCREECH OWL.

Similar to the gray phase of *O. a. nævius*, but under parts more tinged with grayish and the darker pencilings finer and more generally distributed, nearly, if not quite, obliterating the immaculate white jugular and abdominal areas, always present in *O. a. nævius*; ear-tufts averaging decidedly shorter. *No rufous phase.*

*Adult male*.—Length (skins), 212–245 (219); wing, 155–171 (161.9); tail, 76–86 (81.1); culmen, from cere, 13.5–14.5 (14.1).<sup>a</sup>

*Adult female*.—Length (skins), 228–235 (231); wing, 161.5–177 (166.2); tail, 80–90.5 (84.1); culmen, from cere, 13.5–16 (14.7).<sup>b</sup>

California, except southeastern desert region (and, probably, northern coast district) and south-central Oregon (Fort Klamath).

*Ephialtes choliba* (not *Strix choliba* Vieillot) LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vi, 1853, 4 (Sacramento, California).

*Scops asio* (not *Strix asio* Linnæus) CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 51, part (Petaluma, San Francisco, and Sacramento Valley, California).—HEERMANN, Rep. Pacific R. Surv., x, pt. iv, no. 2, 1859, 35 (California).—COOPER, Orn. Calif., 1870, 420.—NELSON, Proc. Bost. Soc. N. H., xvii, 1875, 363 (Nevada City, California).—RIDGWAY, Orn. Fortieth Parallel, 1877, 571 (Sacramento, California).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 433 (Stockton, California).

[*Scops asio*] *a. asio* COUES, Birds Northwest, 1874, 303, part.

[*Scops asio*] *a. asio* RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 106, 107, part.

*Scops asio*, var. *mecallii* (not of Cassin) COOPER, Am. Nat., iii, 1869, 479 (Colorado Valley, Ariz.).

*Scops asio*, var. *maccalli* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 52, part (Stockton, California).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1876, 262 (Ft. Tejon, California).

*Scops asio bendirei* BREWSTER, Bull. Nutt. Orn. Club, vii, Jan., 1882, 31 (Nicasio, Marin Co., California; coll. W. Brewster).—REICHENOW and SCHALOW, Journ. für Orn., 1883, 415 (reprint of orig. descr.).

[*Scops*] [*asio*] *bendirii* COUES, Key N. Am. Birds, 2d ed., 1884, 506.

*Megascops asio bendirei* STEJNEGER, Auk, ii, April, 1885, 184.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 373c.—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 361.—HASBROUCK, Auk, x, 1893, 251, 255 (geog. range).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 23 (Los Angeles Co., California).—SHARP, Condor, ix, 1907, 87 (San Diego Co., California, breeding).

[*Megascops*] *asio bendirei* RIDGWAY, Man. N. Am. Birds, 1887, 262.

*Otus* [*asio*] *bendirei* STONE, Auk, xx, July, 1903, 275.—CARRIGER and RAY, Condor, xiii, 1911, 73 (Santa Clara Co., California).

*Otus asio bendirei* STONE, Proc. Ac. Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, California).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372; Check List, 3rd ed., 1910, 173.—GOLDMAN, Condor, x, 1908, 203 (Arroyo de los Gatos, near Tulare Lake, California).

*Scops bendirei* GURNEY, Cat. Birds of Prey, 1894, 38.

[*Scops*] *bendirei* SHARPE, Hand-list, i, 1899, 289.

<sup>a</sup> Eight specimens.

<sup>b</sup> Six specimens.

## OTUS ASIO CINERACEUS (Ridgway).

## ARIZONA SCREECH OWL.

Similar to *O. a. aikeni*, but more delicately penciled, both above and below, the pencilings on under parts averaging denser or more numerous.

*Adult male*.—Length (skins), 175–200 (190); wing, 145.5–159.5 (152.6); tail, 72–83 (76.5); culmen, from cere, 12–14 (12.9).<sup>a</sup>

*Adult female*.—Length (skins), 180–220 (202); wing, 149.5–161 (156.5); tail, 72–80.5 (75.1); culmen, from cere, 12–14.5 (13.5).<sup>b</sup>

Southern Arizona (Fort Huachuca; Huachuca Mountains; San Pedro slope of Santa Catalina Mountains; Riverside and Blackwater, Pinal County; Fort Grant, Graham County; Tucson; Camp Lowell; Gila River; Colorado River; Little Colorado River; Bill Williams Fork; Fort Mojave), southeastern California (Colorado River), and southwestern New Mexico (Silver City and Red Rock, Grant County); probably also northern Sonora.

*Scops m'calli* (not *S. m'callii* Cassin) KENNELLY, Rep. Pacific R. R. Surv., x, pt. iv, 1859, 20 (Bill Williams Fork, Arizona).

*Scops m'calli* COUES, Proc. Ac. Nat. Sci. Phila., 1866, 49 (Fort Mojave and Colorado Chiquito R., Arizona).

[*Scops asio*.] Var. *m'callii* COUES, Key N. Am. Birds, 1872, 203, part.

*Scops asio* . . . var. *m'callii* COUES, Check List, 1873, no. 318b, part.

*Scops asio* . . . var. *m'calli* HENSHAW, Zool. Expl. W. of 100th Merid., 1875, 405, part (Gila R. and Fort Grant, Arizona).

[*Scops asio*] c. *m'callii* COUES, Birds Northwest, 1874, 303, part.

<sup>a</sup> Eleven specimens.<sup>b</sup> Nine specimens.

Locality.	Wing.	Tail.	Culmen from cere.
MALES.			
Three adult males from Huachuca Mountains, Arizona.....	155.7	76.7	13.3
Five adult males from Camp Lowell, near Tucson, Arizona.....	154.2	78	12.8
One adult male from Blackwater, Arizona.....	150	73.5	13
Two adult males from Colorado River, California.....	145.5	74	12.5
FEMALES.			
Four adult females from Camp Lowell, near Tucson, Arizona.....	154	76.1	13.2
Two adult females from Tucson, Arizona.....	163.7	78	13.7
One adult female from Blackwater, Arizona.....	161	79.5	13.5
One adult female from Colorado River, Arizona.....	159	80.5	13.5
One adult female from Colorado River, California.....	155	75.5	14

With a considerable series of specimens before me, including those upon which *O. a. gilmani* Swarth was based, I am quite unable to appreciate reasons for the recognition of that supposed subspecies; indeed, few of the recognized subspecies of the group present as great uniformity of coloration as does this series as a whole. As to measurements, there is reason for believing that some specimens are wrongly sexed. The two males from the Colorado River, California, have the wing (which is the same length in both) only 2.5 mm. shorter than in one of the males from Camp Lowell.



- Scops asio*, var. *maccalli* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 49, 52 ("Camp 118, New Mexico"=Bill Williams Fork, Arizona).
- Scops trichopsis*? (not *S. trichopsis* Wagler) RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 114, part (descr. of adult male from "New Mexico," i. e. Arizona; monogr.).
- Scops trichopsis* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 403, part.—COUES, Check List, 2d ed., 1882, no. 470, part.
- S[cops] trichopsis*? COUES, Key N. Am. Birds, 2d ed., 1884, 506, part.
- (?) [*Scops asio*.] Subsp.  $\delta$ . *Scops trichopsis* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 119, part (w. Mexico).
- Scops asio trichopsis*? BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 33, part.
- Scops asio trichopsis* BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 36 (Camp Lowell, Arizona).
- Megascops asio trichopsis* RIDGWAY, Proc. U. S. Nat. Mus., viii, Sept. 2, 1885, 355, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 373f, part.—SCOTT, Auk, iii, 1886, 423 (San Pedro slope of Santa Catalina Mts., Arizona).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 368, part, pl. 12, fig. 11 (egg).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 116 (near Tucson, Arizona).—HASBROUCK, Auk, x, 1893, 251, 257, part (geog. range).
- M[egascops] asio trichopsis* RIDGWAY, Man. N. Am. Birds, 1887, 261, part.
- Megascops asio cineraceus* RIDGWAY, Auk, xii, no. 4, Oct., 1895, 390, in text (based on *M. a. trichopsis* RIDGWAY, Man. N. Am. Birds, and therefore including also *O. a. aikeni*; but type from Fort Huachuca, Arizona; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 373, part.—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 8 (Huachuca Mts., Arizona, below 6,500 feet.).—HUNN, Auk, xxiii, 1906, 421 (Silver City, s. w. New Mexico).
- M[egascops] asio cineraceus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 261, 592, part.
- Otus a[sio] cineraceus* STONE, Auk, xx, July, 1903, 275.
- Otus asio cineraceus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 372; Check List, 3d ed., 1910, 173.—SWARTH, Univ. Calif. Pub. Zoology, vii, no. 1, 1910, 2, in text (crit.).
- Scops cineracea* SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 19.
- [*Scops*] *cineracea* SHARPE, Hand-list, i, 1899, 289.
- Otus asio gilmani* SWARTH, Univ. Calif. Pub. Zool., vii, no. 1, May 26, 1910, 1 (Blackwater, Pinal Co., Arizona; coll. Mus. Univ. Calif.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxix, 1912, 382.

## OTUS ASIO XANTUSI (Brewster).

## XANTUS'S SCREECH OWL.

Similar to *O. a. cineraceus* but vermiculations of upper parts finer and blackish streaks narrower, size smaller, and toes more scantily feathered.

*Adult male*.—Length (skins), 168–191 (177); wing, 140.5–150.5 (144.9); tail, 68.5–75 (71.4); culmen, from cere, 12.5–13.5 (12.8).<sup>a</sup>

*Adult female*.—Length (skins), 176–186.5 (181.2); wing, 147–152.5 (149.7); tail, 76–77.5 (76.7); culmen, from cere, 13.5–14 (13.7).<sup>b</sup>

<sup>a</sup> Five specimens.<sup>b</sup> Two specimens.

Southern Lower California (Santa Anita; Miraflores; Agua Caliente; Cape San Lucas; Cardón Grande; El Rancho Viejo).

*Scops asio*, var. *maccalli* (not *Scops mcallii* Cassin) RIDGWAY, in Baird, Brewer, and RIDGWAY, Hist. N. Am. Birds, iii, 1874, 52, part (Cape San Lucas, Lower California).

*S[cops] trichopsis* BELDING, Proc. U. S. Nat. Mus., vi, 1883, 349, in text (Agua Caliente and Miraflores, s. Lower California).

*Scops trichopsis?* (not of Wagler) RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 114, part (Cape San Lucas); v, 1883, 533, footnote (Cape San Lucas).

*M[egascops] asio trichopsis* RIDGWAY, Man. N. Am. Birds, 1887, 261, part (Cape San Lucas).

*Megascops asio trichopsis* BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, ii, 1889, 284 (Cape San Lucas, Cardon Grande, and El Rancho Viejo, Lower California).

*Megascops xantusi* BREWSTER, Bull. Mus. Comp. Zool., xli, no. 1, Sept., 1902, 93 (Santa Anita, s. Lower California; coll. W. Brewster).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1893, 341.

*Otus xantusi* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 372; Check List, 3d ed., 1910, 174.

### OTUS TRICHOPSIS (Wagler).

#### SPOTTED SCREECH OWL.

Somewhat like *O. asio mcallii* and *O. a. cineraceus* but smaller, especially the feet; coloration much darker, with coarser mottling on upper parts; lower hindneck crossed by a collar of white spots; dark spaces on outer webs of primaries not barred or mottled with black; throat strongly cinnamonaceous; under parts with black streaks much broader and transverse pencilings heavier and less numerous; inner web of outermost primary without distinct whitish spots (except, sometimes, one near base), and bristly tips to feathers of face greatly developed (as in *O. barbarus*); about the size of *O. barbarus*, but gray phase with general color of upper parts ash gray instead of brown, under parts white with large spots and broad streaks of black connected by black crossbars, throat vinaceous-buff, lower end of tarsus feathered, and toes distinctly bristled.

#### Gray phase.

*Adults (sexes alike).*—General color of upper parts brownish gray, coarsely vermiculated with dusky, broadly streaked with black (the streaks more or less jagged or serrated and broadest on forehead and crown), the sides and posterior border of pileum irregularly spotted with dull buffy white, the lower hindneck with much larger, transversely ovate, spots of the same; outer webs of exterior scapulars with a very large subterminal subovate spot of dull buffy white or brownish white, the tip more or less broadly margined with black; outermost middle and greater wing-coverts with similar large spots; secondaries banded with mottled darker and paler grayish brown; outer webs of primaries with large, semiovate or subquadrate spots of dull brownish white, more strongly tinged with brownish buffy on

inner (proximal) quills, the spots larger on outermost quills, where those on proximal portion are frequently confluent along edge; middle rectrices coarsely mottled with dusky and light brownish gray, the mottlings having more or less of a transverse tendency, the remaining rectrices mostly dusky brownish gray with incomplete or interrupted narrow bands of pale brownish gray to buffy brown (those on inner webs becoming dull whitish toward edge), these bands averaging about half as wide as the dusky interspaces; face, including "eyebrows" (superciliary region), dull grayish white, irregularly barred with dusky, except on lores, the bristly antrorse feathers of which have long, hair-like, black tips; a more or less distinct broad black bar across posterior margin of auricular region, and behind this a broad transverse area of buff-pink or light vinaceous-cinnamon, narrowly and sparsely barred with black, this pinkish or vinaceous color extending above to basal portion of ear-tufts and below crossing throat, where narrowly barred with dusky; chin immaculate dull white; rest of under parts dull white (the plumage, especially on flanks, suffused with cinnamon-buff or pale cinnamon basally), very heavily streaked with black (the streaks broader, spot-like on sides of breast) and narrowly, though rather sparsely, barred with brownish black, the bars confluent with the broad black mesial streaks; legs dull brownish white, more or less strongly suffused with cinnamon on thighs, rather heavily mottled with brown (more or less deep); median portion of lower abdomen and anal region immaculate white; under tail-coverts white, the longer ones with a subterminal sagittate, diamond-shaped, or cross-shaped, mark of dusky; under wing-coverts dull brownish buff or pale dull cinnamon-buff, passing into whitish on edge of wing, more or less streaked or spotted with dusky in a line just within the whitish edge; under primary coverts plain dusky brownish gray; under surface of remiges brownish gray, the secondaries and proximal primaries broadly banded with pale buff, the distal primaries not showing distinct lighter spots except toward base; bill pale grayish yellow, yellowish gray, or dull greenish (in dried skins); iris bright lemon yellow; toes dull grayish brown (in dried skins).

*Young*.—Remiges and rectrices (if developed) as in adults; upper parts dull grayish brown, indistinctly barred or transversely mottled with dusky and dull grayish white, the latter on tips of the feathers; under parts dull white, broadly barred with grayish brown.

*Rufescent phase.*

*Adults (sexes alike)*.—Above light dull cinnamon-rufous,<sup>a</sup> relieved by conspicuous mesial streaks of black, the back, scapulars, and wing-

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<sup>a</sup> The color is much lighter and duller than in the rufescent phase of *O. asio* and its subspecies, and with the black streaks more conspicuous.



coverts usually having indistinct transverse mottlings or vermiculations of grayish brown or dusky; outer webs of exterior scapulars pale buff to buffy white, margined with black terminally, pattern of larger wing-coverts, remiges, and rectrices as in the gray phase, but the color of both darker and lighter markings more rufescent or cinnamonaceous; face light cinnamon-rufous, sometimes intermixed with buffy white; chin immaculate dull white or buffy white; throat pale cinnamon-rufous streaked with dusky; rest of under parts white (the plumage suffused with light cinnamon-buff beneath surface), with conspicuous mesial streaks of black, these broadest (spot-like) on breast, and here and there throwing off on each side narrow bars of black, often in pairs, enclosing between them a space of light cinnamon-rufous; thighs plain light cinnamon-rufous, passing into pale cinnamon-buff on legs.

*Young*.—Remiges and rectrices (if developed) as in adults; rest of upper parts as in adults but black streaks indistinct (obsolete in some places); under parts pale cinnamon-buff deepening into light cinnamon-rufous on chest and throat, the breast, sides, and flanks with narrow and indistinct bars of dusky.

*Adult male*.—Length (skins), 150–193 (175); wing, 139.5–151.5 (143.2); tail, 64–75.5 (69.7); culmen, from cere, 10.5–13.5 (12.1).<sup>a</sup>

*Adult female*.—Length (skins), 164–199 (189); wing, 141–151 (145.7); tail, 68.5–75.5 (71.5); culmen, from cere, 11.5–13 (12.2).<sup>b</sup>

Southern Arizona (Huachuca Mountains; west side San Luís Mountains; San Pedro slope of Sierra de Catalina; Fort Lowell), and southward through Mexico, in States of Chihuahua (El Carmen), Durango (Rio Sestín), Jalisco (Los Masos, 5,800 feet; La Pisagua), Michoacán (Patzcuaro), Guerrero (Omiteme, 8,000 feet), Mexico (Chimalpa; Ajusco), Puebla (Zentla), and Oaxaca (La Parada), and Territory of Tepic (Sierra Madre) to highlands of Guatemala (Cobán; Dueñas; Volcán de Fuego above Calderas; San Bernardino in Mon-

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Nine specimens.

Locality.	Wing.	Tail.	Culmen from cere.
MALES.			
Six adult males from Arizona.....	144.1	69.8	11.8
Six adult males from Mexico (chiefly from Durango and Jalisco).....	141.3	69.4	12.3
One adult male from Guatemala (Toyabaj, Quiché).....	146	68	13
FEMALES.			
Five adult females from Arizona.....	144	71.5	12.2
Three adult females from Mexico.....	148.2	72.5	12
One adult female from Guatemala (Villa Nueva).....	147	70	12.5

tagua Valley; Villa Maria; Villa Nueva; Toyabáj and Uspantán, Quiché).

*Scops trichopsis* WAGLER, Isis, 1832, 276 (Mexico; coll. Württemberg Mus.).—KAUP, Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 227.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 17, pl. 62 (El Carmen, Chihuahua; Sierra Madre, Tepic; Patzcuaro, Michoacan; Zentla, Puebla; Ajusco and Chimalpa, Mexico; Omilteme, Guerrero; La Parada, Oaxaca; Villa Maria, Toyabaj, and Uspantan in Quiché, Dueñas, Volcan de Fuego above Calderas, San Bernardino in Montagua Valley, and Coban, Guatemala).

?*Scops trichopsis* BONAPARTE, Consp. Av., i, 1850, 46.

*S[cops] trichopsis* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 57.—SALVIN, Ibis, 1874, 314 (crit.).

[*Scops*] *trichopsis* GRAY, Hand-list, i, 1869, 47, no. 490.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.—SHARPE, Hand-list, i, 1899, 288.

*E[phialtes] trichopsis* GRAY, Gen. Birds, i, 1844, 38.

*Asio trichopsis* BONAPARTE, Rev. et Mag. de Zool., 1854, 543.

*Megascops trichopsis* KAUP, Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 227 (descr. of type).—STEJNEGER, Auk, ii, 1885, 184.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xvi, 1899, 109.—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 8 (Huachuca Mts., 6,000 ft., Arizona).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 164 (Rio Sestin, n. w. Durango).

*M[egascops] asio trichopsis* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 261, part. *Otus trichopsis* STONE, Auk, xx, July, 1903, 275.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372; Check List, 3rd ed., 1910, 174.

*Scops m'callii* (not *Scops mcallii* Cassin) SCLATER and SALVIN, Ibis, 1859, 220 (Guatemala; crit.).

*Scops maccalli* SCLATER, Proc. Zool. Soc. Lond., 1858, 296 (La Parada, Oaxaca; crit.).

[*Scops asio*] *β. maccalli* RIDGWAY, Proc. U. S. Nat. Mus., i, Aug. 15, 1878, 106, 109, part (San Bernardino, Volcan de Fuego, Dueñas, and Coban, Guatemala; Mexico; monogr.).

*Scops asio maccalli* BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 33, part (Guatemala; e. Mexico).

*Megascops asio mcallii* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 373b, part (Guatemala).—HASBROUCK, Auk, x, 1893, 251, 254, part (geog. range).

*M[egascops] asio mcallii* RIDGWAY, Man. N. Am. Birds, 1887, 261, part (e. Mexico; Guatemala).

*Scops asio*, var. *enano* "Lawrence, MSS." RIDGWAY, Bull. Essex Inst., v, Dec., 1873, 200 (Mexico; coll. G. N. Lawrence); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 48.

[*Scops asio*] *e. enano* COUES, Birds Northwest, 1874, 304.

[*Scops asio*] subsp. *γ. Scops enano* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 118 (w. Mexico; Guatemala).

*Megascops aspersus* BREWSTER, Auk, v, Jan., 1888, 87 (El Carmen, Chihuahua; coll. W. Brewster); viii, 1891, pl. 3, upper fig.; xv, 1898, 186 (Huachuca Mts., Arizona; crit.).—GURNEY, Cat. Birds of Prey, 1894, 38.—HASBROUCK, Auk, x, 1893, 251, 264.

*Megascops adpersus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 16, in text.

*Megascops ridgwayi* NELSON and PALMER, Auk, xi, Jan., 1894, 40 (Patzcuaro, Michoacan, s. w. Mexico; coll. U. S. Nat. Mus.; = young of rufous phase).

*Scops ridgwayi* GURNEY, Cat. Birds of Prey, 1894, 37.

## OTUS PINOSUS (Nelson and Palmer).

## LAS VIGAS SCREECH OWL.

*Young male.*<sup>a</sup>—Most nearly resembling the young of *O. trichopsis*, but very much darker above, under parts much more broadly barred with dark sooty brown, and spots on outer webs of primaries relatively smaller (not wider than the darker interspaces) and more strongly contrasted; decidedly smaller.

Above deep sooty brown (between warm sepia and fuscous), broken by spotting of lighter brown and broad though rather indistinct irregular bars of blackish; secondaries dusky grayish brown, the innermost ones (tertials) crossed on distal portion by two or three narrow, irregular bands of light cinnamon-drab and narrowly tipped with the same, the dusky interspaces broken by irregular mottlings of lighter grayish brown; other secondaries and proximal primaries with rather large and very distinct spots of cinnamon-drab on outer webs, the distal primaries (except outermost) with the spots larger and dull white on portion anterior to sinuations; primary coverts very dark sooty brown, their outer webs spotted with cinnamon-drab; tail dark sooty brown crossed by narrow irregular, interrupted bands of cinnamon-drab; face grayish white barred with dark sooty brown or sooty black, except on lores, the bristly feathers of which have very long and slender hair-like tips; a narrow band of sooty black across posterior end of auricular region; chin dull white, narrowly barred with dusky; rest of under parts dull white, more or less tinged with pale brownish buff, very broadly barred with dark sooty brown, the bars averaging about 20 mm. in width on breast to 30 mm. on flanks; length (skin), 170; wing, 130; tail, 58; culmen, from cere, 10.<sup>b</sup>

Southeastern Mexico, in State of Vera Cruz (Las Vigas, at north-eastern base of the Cofre de Perote, 8,000 feet altitude).

*Megascops pinosus* NELSON and PALMER, Auk, xi, Jan., 1894, 39 (Las Vigas, Vera Cruz, c. Mexico; coll. U. S. Nat. Mus.).—RIDGWAY, in Salvin and Godman, Biol. Centr.-Am., Aves, iii, 1897, 17, footnote (full descr.; crit.).

*Scops pinosus* GURNEY, Cat. Birds of Prey, 1894, 38.

[*Scops*] *pinosa* SHARPE, Hand-list, i, 1899, 289.

## OTUS VINACEUS (Brewster).

## CHIHUÁHUA SCREECH OWL.

Similar to *O. cooperi*, but much smaller and lighter colored; also resembling *O. asio cineraceus*, but color of upper parts less ashy (pale drab) and more minutely vermiculated, dark pencilings on under parts narrower, and toes more scantily feathered.

<sup>a</sup> The young female and adults of both sexes are unknown.

<sup>b</sup> One specimen (the type), in which the remiges and rectrices are fully developed.



*Adult female*.—Ground color of upper parts pale broccoli brown or drab, grayer on wing-coverts and scapulars, everywhere finely vermiculated with dusky, all the feathers (except on rump) with distinct though narrow mesial streaks of blackish, these broader and tending to "herring-bone" pattern on pileum, where the ground color is more strongly tinged with brown; inner webs of ear-tufts grayish white (more buffy toward base), transversely mottled with dusky; outer webs of exterior scapulars mostly pale buff, forming a large, irregular patch on each feather, the lowermost (outermost) middle wing-coverts similarly but less conspicuously marked; secondaries dull grayish brown banded with pale broccoli brown and finely mottled along edges with pale brown and dusky; primaries marked with distinct quadrate spots of pale buffy brown, becoming paler (light brownish buff) on proximal portion of quills, many of these lighter colored spots enclosing a dusky bar; and the darker ones mottled with pale grayish brown; tail similar in coloration to secondaries but the paler bands narrower; face grayish white, finely and rather faintly barred with grayish brown; a broad but somewhat broken band of brownish black across sides of head, from immediately beneath and behind ear-tufts to sides of throat, this black band extensively suffused externally with pale buffy; across middle of throat a series of narrow "herring-bone" streaks of black, connecting lower extremities of the black facial rim, and immediately beneath this a small area of immaculate brownish white; ground color of under parts white (the feathers pale buffy beneath surface), everywhere, except on median line of abdomen, anal region, and under tail-coverts, narrowly and rather densely barred with irregular zigzag lines of dusky, upper breast with several longitudinal spots of black, each with an external suffusion of bright brown, the uppermost of these spots narrower (streak-like), the lower decidedly broader; feathers of lower breast (except median portion), sides, flanks, and sides of abdomen with narrow but very distinct median streaks, which occasionally, through coalescence with the fainter transverse lines, tend somewhat to a "herring-bone" pattern; median line of lower breast and abdomen and anal region immaculate white (the feathers pale buffy beneath surface); under tail-coverts white, faintly and rather distantly irregularly barred with grayish brown; upper portion of thighs pale buff, faintly and sparsely barred with light brown; tarsi and lower portion of thighs brownish white, transversely mottled with grayish brown, chiefly on outer side; under wing-coverts pale buff, the edge of wing, however, white; bill dusky, the terminal portion pale dull yellowish; length (skin), 205; wing, 151; tail, 76; culmen, from cere, 14.<sup>a</sup>

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<sup>a</sup> One specimen (the type); adult male not seen.

## Northwestern Mexico, in State of Chihuahua (Durasno).

*Megascops vinaceus* BREWSTER, Auk, v, Jan., 1888, 88 (Durasno, Chihuahua; coll. W. Brewster); viii, 1891, pl. 3, lower fig.—HASBROUCK, Auk, x, 1893, 251, 264.

*Scops vinaceus* GURNEY, Cat. Birds of Prey, 1894, 38.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 19.

[*Scops*] *vinacea* SHARPE, Hand-list, i, 1899, 289.

## OTUS COOPERI (Ridgway).

COOPER'S SCREECH OWL.<sup>a</sup>

Very similar in coloration to the grayish phase of *O. choliba*, but toes very distinctly bristled; under parts much more densely vermiculated, legs much more rufescent and more distinctly barred, white variegation on outermost scapulars much less conspicuous, and lighter bands on remiges and rectrices narrower and more numerous; tail relatively much shorter, legs longer, and toes and claws larger.

*Adults (sexes alike).*—Above light grayish brown or pale drab-brown, minutely vermiculated with dusky, the feathers of pileum and back having mesial, chain-like, streaks of blackish; outer webs of exterior scapulars inconspicuously variegated with white irregular spotting; outer webs of primaries with quadrate spots of pale fulvous margined with blackish, there being about ten of these spots on longest quill; tail crossed by about ten to twelve narrow bands of pale fulvous likewise margined on each side by a dusky line; face brownish white, finely but distinctly barred with dusky brown, the "eyebrow" (superciliary region) lighter and more coarsely mottled; face bordered laterally or posteriorly by a distinct narrow band of dusky spots; under parts white, densely penciled with blackish and grayish brown zigzag lines, imparting a light brownish appearance to the general surface; legs light rusty brown thickly barred with deeper brown; "iris lemon yellow; cere, bill, and feet yellowish green."<sup>b</sup>

*Young.*—General color above light grayish brown broken by very minute and rather indistinct transverse vermiculations of dusky and larger but still inconspicuous transverse markings of white, these larger and more obvious on outer webs of middle wing-coverts; under parts dull whitish crossed everywhere with transverse vermiculations or irregular narrow pencillings of dusky, strongly suffused with pale brownish on chest, where the vermiculations are minute and confused; flanks and under tail-coverts with bars broad and distinct, the interspaces nearly pure white and wider than the mottled-brownish bars; remiges and rectrices (if developed) as in adults; bill pale horn color, yellowish at tip; iris yellow; claws pale horn color, darker terminally.

<sup>a</sup> Named for Señor Juan Cooper, of Cartago, Costa Rica, well known as a collector of Costa Rican birds, and collector of the type-specimen of the present species.

<sup>b</sup> Juan Cooper, on label.

*Adult male?*—Wing, 171; tail, 86; culmen, from cere, 16.<sup>a</sup>

*Adult female.*—Length (skin), 245; wing, 173–178.5 (175.7); tail 82–83.5 (82.7); culmen, from cere, 15.5–16 (15.7).<sup>b</sup>

Highlands of Costa Rica (Santa Ana; Reytes, near Cartago; San José) and northward through Nicaragua (Acoyapa; Momotombo), Salvadór (Volcán de San Miguel), etc., to Oaxaca (Cacoprieto).<sup>c</sup>

*Scops cooperi* RIDGWAY, Proc. U. S. Nat. Mus., i, sig. 8, Aug. 15, 1878, 116 (Santa Ana, Costa Rica; coll. U. S. Nat. Mus.).—GURNEY, Cat. Birds of Prey, 1894, 37.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 19 (Cacoprieto, Oaxaca; Volcan de San Miguel, Salvador; Acoyapa and Momotombo, Nicaragua; Santa Ana and San José, Costa Rica).

[*Scops*] *cooperi* SHARPE, Hand-list, i, 1899, 289.

*Megascops cooperi* ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 125 (Costa Rica).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 129.—HASBROUCK, Auk, x, 1893, 251, 263.

*M*[*egascops*] *cooperi* BREWSTER, Auk, v, 1888, 88, in text.

*Otus cooperi* CARRIKER, Ann. Carnegie Mus., vi, 1910, 475 (Costa Rica).

### OTUS CHOLIBA (Vieillot).

#### CHOLIBA SCREECH OWL.

*Brown (usual) phase.*

*Adults (sexes alike).*—Upper parts light grayish brown to nearly verona brown, densely vermiculated with dusky, the feathers with more or less distinct irregular mesial streaks or spots of blackish, especially on crown and back, and more or less mottled and barred (mostly on concealed portion of feathers) with pale brownish buff; across nape a more or less distinct broken band of pale buffy or whitish spots (but these sometimes obsolete); outer webs of exterior scapulars mostly white, this more or less barred with black; outer webs of outermost middle wing-coverts with a large subterminal spot of white or buffy, the outermost greater coverts sometimes similarly marked but the white or buffy spots smaller and more irregular; secondaries and inner primaries banded with light dull cinnamon, the bands margined with a narrow line of dusky and mottled or flecked in center with the same, and becoming paler (dull light brownish buffy or dull buffy whitish) toward edge of quills, the longer primaries with the lighter bands or spots immaculate; tail crossed by broader bands of dusky (mottled on outer webs with light brownish cinnamon) and narrower interrupted ones of light cinnamon, the latter usually mottled or flecked in center with dusky; face, including “eyebrows” (superciliary region) dull brownish white, narrowly barred with dusky

<sup>a</sup> One specimen, from Costa Rica.

<sup>b</sup> Two specimens, from Costa Rica.

<sup>c</sup> I have seen only Costa Rican examples of this species.



brown, the ground color deepening into pale to light brown beneath and in front of eyes and into deep brown or chestnut-brown immediately above eyes; facial circle or rim (very distinct) nearly uniform brownish black; under parts dull white (the feathers buffy beneath surface), marked with conspicuous mesial streaks of black and narrow irregular bars of black or dusky brown, producing a very regular "herring-bone" pattern over the whole of the lower surface, except anal region and median portion of lower abdomen, which are immaculate pale buff or buffy white; legs pale brownish buff to dull buffy whitish, barred, more or less heavily, with brown; bill pale dull yellowish (in dried skins), the latero-basal portion grayish or horn color, pea greenish in life; iris light yellow; toes brownish (in dried skins).

*Young*.—Remiges and rectrices (if developed) as in adults; upper parts mixed dull white and dull buff or clay-color narrowly and regularly barred with dusky, the under parts similar but the bars lighter or more brownish; a black facial (post-auricular) border, as in adults.

*Rufous phase.*

*Adult female*.<sup>a</sup>—Above bright russet or cinnamon-rufous, with narrow mesial streaks of black, these broadest on crown, obsolete on hindneck and rump; lower hindneck and upper back indistinctly spotted with pale buff, each feather having two or three pairs of roundish or, sometimes, transverse spots; occiput or upper nape with large, partly concealed, blotches of pale buff, forming an inconspicuous interrupted band; outer webs of exterior scapulars mostly white, tipped or terminally margined with black; outer webs of outermost middle and greater wing-coverts also with a large subterminal spot of white; outer webs of primaries broadly banded with cinnamon and dull ochraceous-buff, the spots of the former color becoming dusky next to shaft, and the paler ones inclining to white exteriorly on proximal half of the second to sixth quills (counting from outside), inclusive; tail banded with cinnamon-brown and light rusty cinnamon, the bands of the former color decidedly the broader (especially on middle rectrices) and margined, as well as more or less mottled, with dusky; face buffy whitish strongly tinged with rusty, especially around eyes, the auricular region terminated by a broad bar (facial

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<sup>a</sup> Described from no. 44818, coll. Am. Mus. Nat. Hist., from Bahia, Brazil, this being the only example I have seen of the extreme rufous phase, which is very exceptional in South America and does not occur at all in the considerable series of specimens examined from Panama and Costa Rica.

The rufous phase of *O. choliba* is much paler than that of either *O. vermiculatus* or *O. guatemalæ*, has the face whitish, instead of rufous, and bordered posteriorly by a conspicuous postauricular bar of black, and the markings on the under parts are very different, having a distinct and regular "herring-bone" pattern, as in the grayish brown phase.

rim) of brownish black; under parts white, each feather, except on throat, anal region, and under tail-coverts, with a distinct narrow mesial streak of black, confluent with narrow and irregular bars of dark rusty brown, both the longitudinal and transverse markings suffused here and there with cinnamon-rufous; throat narrowly barred with russet, the chest and sides broadly barred with the same, the russet bars having narrow dusky margins; under tail-coverts with rather distant narrow bars of rusty brown; legs pale buffy, narrowly barred in front and on outside with rusty brown or russet; under wing-coverts pale buff, the outermost (near edge of wing) irregularly barred with rusty and dusky.

*Adult male*.—Length (skins), 206–242 (227); wing, 162–182 (170.9); tail, 78–94.5 (88.3); culmen, from cere, 12.5–15 (14.1).<sup>a</sup>

*Adult female*.—Length (skins), 200–250 (228); wing, 162–183 (172.1); tail, 86–96 (91.2); culmen, from cere, 13.5–15.5 (14.6).<sup>b</sup>

Costa Rica (San José; La Palma de San José; Escazú; San Juan; Reytes; Volcán de Irazú; La Estrella de Cartago), Panamá (Boquerón and Divala, Chiriquí; Chitra, Verágua; Natá, Coclé; Lion Hill, Canal Zone; San Miguel Island, Bay of Panamá), and southward over greater part of South America, east of Andes, as far as Peru (Garita del Sol; Rio Cadena, Cuzco; Santa Ana; upper Rio Ucayali; Cashiboya; Chamicuros; Sarayacu; Yurimaguas), Bolivia (Province of Chiquitos; Moxos; Caiza), Argentina (Ocampo; Córdoba; Tucumán; Chaco; Pacheco; Entre Rios; Rio Paraguay; lower Rio Pilcomayo; Tapia), Paraguay (Sapucáy), and Uruguay (Concepción).

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Ten specimens.

Locality.	Wing.	Tail.	Culmen from cere.
MALES.			
Six adult males from Panama (mainland).....	166.2	84.7	14
Five adult males from San Miguel Island, Bay of Panama.....	172.9	90.5	14.5
Three adult males from Costa Rica.....	172.5	90.5	13.8
FEMALES.			
Two adult females from Paraguay.....	165.7	90.5	14
One adult female from southeastern Brazil.....	165	89	14
One adult female from Venezuela (Vallé).....	173	93.5	15
One adult female (?) [male ?] from Margarita Island, Venezuela.....	161	86	14.5
Three adult females from San Miguel Island, Bay of Panama.....	180.8	95.5	15.2
Two adult females from Costa Rica.....	174.2	88.2	14.5

So far as I am able to see, there is no difference in coloration between specimens from Costa Rica and Panama on the one hand and those from Brazil, Paraguay, etc., on the other, and the species seems to be remarkably uniform throughout this vast extent of territory.

- Strix choliba* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 39 (Paraguay; based on *Choliba* Azara, Apunt. Parag., ii, 218).
- E[phialtes] choliba* GRAY, Gen. Birds, i, Sept., 1845, 38.
- Ephialtes choliba* PELZELN, Orn. Bras., i, 1868, 9; iv, 1871, 399.
- Scops choliba* D'ORBIGNY, Voy. Am. Mérid., iv, pt. 3, 1839, 132 (Corrientes, Argentina; Chiquitos, etc., Bolivia; habits).—D'ORBIGNY and LAFRESNAYE, Mag. de Zool., 1838 (Synopsis Avium, p. 8) (Corrientes, Argentina; Chiquitos, Bolivia).—TSCHUDI, Fauna Peruana, Aves, 1846, 118.—STRICKLAND, Orn. Syn., i, 1855, 204.—SCLATER, Proc. Zool. Soc. Lond., 1858, 133 (Cayenne; Brit. Guiana; Brazil; e. Peru; Bolivia; Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 462 (Lion Hill, Panama).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1866, 198 (upper Rio Ucayali, e. Peru); 1867, 590 (Mexiana I., lower Amazon).—TACZANOWSKI, Orn. du Pérou, i, 1884, 185.
- Sc[ops] choliba* TSCHUDI, Wiegmann's Archiv für Naturg., x, pt. i, 1844, 267 (Peru).
- S[cops] choliba* CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 733.
- Megascops choliba* BERLEPSCH, Bull. Brit. Orn. Club, xii, no. lxxxii, Oct. 30, 1901, 8, 9, in text (crit. nomencl.).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 40 (Garita del Sol, centr. Peru; crit.).
- Pisorhina choliba* BERLEPSCH and HARTERT Novit. Zool., ix, April, 1902, 116 (Perico and Ciudad Bolivar, Venezuela; crit.).—IHERING, Rev. Mus. Paulista, vi, 1904, 336 (Paraguay).—BERLEPSCH and STOLZMANN, Ornith., 1906, 99 (Santa Ana, Peru; crit.), 124 (Rio Cadena, Cuzco, Peru).—HELLMAYR, Novit. Zool., xiv, no. 2, 1907, 407, in text.—LOWE, Ibis, 1907, 556 (Margarita I., Venezuela).—CORY, Pub. 137, Field Mus. N. H., 1909, 242 (Margarita I.; crit.).—CHUBB, Ibis, 1910, 75 (Sapucay, Paraguay; descr. eggs).
- Pisorhina choliba choliba* HARTERT and VENTURI, Novit. Zool., xvi, Dec., 1909, 235 (Ocampo, Argentina; descr. eggs).
- Otus choliba* THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1905, 149 (San Miguel I., Bay of Panama).
- Otus choliba choliba* DABBENE, Orn. Argent., 1910, 253 (Cordova, Tucuman, Chaco, and Pacheco, Argentina).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 474 (Reytes, San Jose, and Escazu, Costa Rica; crit.).
- (?) *Scops portoricensis* LESSON, Traité d'Orn., 1831, 107 (Porto Rico; coll. Paris Mus.).—DES MURS, Icon. Orn., livr. 5, 1846, pl. 26 ("Porto Rico"; type in coll. Paris Mus.).—PUCHERAN, Rev. et Mag. de Zool., 1849, 26.—SCLATER, Proc. Zool. Soc. Lond., 1858, 133 ("Porto Rico"; Colombia).
- (?) [*Scops*] ? *portoricensis* GRAY, Hand-list, i, 1869, 47, no. 485 ("Porto Rico"; Trinidad; Colombia).
- (?) *Ephialtes portoricensis* DES MURS, Icon. Orn., 1846, in table of contents.
- Ephialtes portoricensis* LÉOTAUD, Ois. Trinidad, 1866, 57.
- Scops brasiliensis* (not *Strix brasiliensis* Gmelin <sup>a</sup>) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (San José, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 629 (Venezuela); 1873, 304 (upper Rio Ucayali, Cashiboya, Chamicuros, and Sarayacu, e. Peru); 1879, 539 (Envigado, Concordia, and Santa Elena, Antioquia, Colombia; habits; descr. nest and eggs), 636 (Province of Chiquitos and Moxos, Bolivia).—FRANTZIUS, Journ. für Orn., 1869, 366 (Costa Rica).—LEE, Ibis, 1873, 137 (Entre Rios, Argentina).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 45 (San José, Costa Rica).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1879, 241 (Guajango, Peru; crit.); 1882, 46 (Yurimaguas, e. Peru).—BARROWS, Auk, i, 1884, 29 (Concepcion, Uruguay).—BERLEPSCH, Ibis, 1884, 436 (Angostura, Venezuela; crit.); Journ. für Orn., 1887, 27, 122 (Paraguay).—BERLEPSCH and IHERING, Zeitschr. Orn., ii, 1885, 166

<sup>a</sup> = *Glaucidium brasiliensis*. See Berlepsch, Bull. Brit. Orn. Club, xii, 1901, 8, 9.



- (Taquara, etc., Rio Grande do Sul, s. Brazil).—FRENZEL, Journ. für Orn., 1891, 115 (Province of Cordova, Argentina).—BOUCARD and BERLEPSCH, The Humming Bird, ii, 1892, 42 (Porto Real, Brazil).—KERR, Ibis, 1892, 141 (Rio Paraguay and lower Rio Pilcomayo, Argentina).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 141 (Chapado, Mattogrosso, s. w. Brazil).—KOENIGSWALD, Journ. für Orn., 1896, 382 (São Paulo, s. Brazil).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 22 (San José, Costa Rica; Colombia to s. Brazil and Paraguay).—SALVADORI, Boll. Mus. Zool., etc., Torino, xii, 1897, 28 (Caiza, s. Bolivia).—HOLMBERG, Segundo Censo Argentina, i, 1898, 510 (notes).—IHERING, Rev. Mus. Paulista, iii, 1899, 334 (Ypiranga and Iguape, Brazil); iv, 1900, 88 (descr. nest and eggs), 162 (Cantogallo, s. Brazil).—BAER, Ornith., xii, 1904, 228 (Tapia, Argentina).—HAGMANN, Zool. Jahrb., 1907, 24 (Mexicana I.).
- S[cops] brasiliensis* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 57.
- [*Scops*] *brasiliensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117, part.
- [*Scops brasiliensis*]  $\alpha$ . *brasiliensis* RIDGWAY, Proc. U. S. Nat. Mus., i, Aug. 24, 1878, 90, 92 (monogr.).
- [*Scops*] *brasiliensis* GRAY, Hand-list, i, 1869, 47, no. 484.—SHARPE, Hand-list, i, 1899, 288.
- Scops brasiliensis* BANGS, Auk, xviii, 1901, 25 (San Miguel I., Panama).
- Megascops brasiliensis* ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. C. R., i, 1887, 125 (La Palma de San José, Costa Rica).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 128 (Cayenne; Brazil); 1899, 304 (Honda, centr. Colombia).—CHERRIE, Auk, ix, 1892, 327 (San José, Costa Rica).—CHAPMAN, Bull. Am. Mus. N. H., 1894, 68 (Trinidad; notes).—ROBINSON, Proc. U. S. Nat. Mus., xviii, 1896, 662 (Margarita Island, Venezuela; habits).—ROBINSON and RICHMOND, Proc. U. S. Nat. Mus., xxiv, 1901, 169 (San Julian, Venezuela).—CLARK (A. H.), Auk, xix, 1902, 262 (Margarita I.).
- Otus brasiliensis* TEMMINCK and SCHLEGEL, Fauna Japonica, Aves, 1850, 25, in text.
- E[phialtes] brasiliensis* GRAY, Gen. Birds, i, Sept., 1845, 38.
- [*Scops*] *brasiliensis* BONAPARTE, Consp. Av., i, 1850, 46.
- [*Asio*] *brasiliensis* BONAPARTE, Rev. et Mag. de Zool., 1854, 543.
- Scops brasiliensis* SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Oti), 1863, 21; no. 36 (Revue), 1873, 11.—FINSCH, Proc. Zool. Soc. Lond., 1870, 557 (Trinidad; crit.).
- Megascops brasiliensis* KAUP, Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 228 (monogr.).

### OTUS GUATEMALÆ (Sharpe).

#### GUATEMALAN SCREECH OWL.

Somewhat resembling *O. choliba* but with upper parts much darker and more coarsely mottled, with the blackish markings in form of spots rather than streaks; face brownish or rusty instead of whitish, without any whitish except, sometimes, on superciliary region or basal portion of loreal plumes; under parts much more coarsely, irregularly, and densely barred, the general surface presenting a coarsely mottled and vermiculated appearance, with the general hue of the darker pencilings distinctly brown, instead of black or brownish black. Rufous phase differing from that of *O. choliba* in having the rufous darker and more uniform, the back without distinct black streaks and devoid of basal spots of ochraceous or fulvous, the pencilings on under parts more numerous, much less distinct or regular, and

rusty or chestnut instead of blackish. Also somewhat resembling *O. hastatus*, but coloration darker and penciling of lower parts denser and more irregular. Differing from *O. vermiculatus* in having the tarsi feathered to base of the toes, in coarser vermiculation of upper parts, and other characters.

*Brown phase.*

*Adults (sexes alike).*—Ground color of upper parts light grayish brown to light mummy brown, everywhere coarsely vermiculated with black or dusky and with irregular spots of black, these sometimes, in places, assuming the form of streaks, the spots most numerous on crown, where often the black predominates; outer webs of exterior scapulars white passing into buff basally and tipped with black or with black and brown vermiculations; outer webs of outermost middle and greater wing-coverts with a large subterminal spot of white or buffy white; outer webs of alulae with large white spots, these passing into cinnamon-buff or light cinnamon on inner portion (next to shaft); secondaries, proximal primaries, and primary coverts crossed by bands of cinnamon, more or less mottled or freckled, in middle, with dusky, the distal primaries with the spots forming these bands larger, white on outer portion, and mostly immaculate; tail dusky grayish brown crossed by narrow bands of dull or brownish cinnamon, both these bands and the dusky interspaces in part broken by mottlings; face dull brownish white to cinnamon or light mars brown, more or less distinctly barred with dusky, the "eyebrows" (superciliary region) usually somewhat lighter in color, rarely approaching whitish; facial circle usually well defined only on lower (subauricular or post malar) portion, mostly sooty black; ground color of under parts dull white, with irregular or zigzag transverse bars of dark brown suffused with lighter brown, and irregular mesial streaks of black, the barring denser anteriorly; legs light to pale tawny-brown or russet, thickly barred with deep to dark brown; under tail-coverts white, irregularly barred with deeper and paler brown (the bars often double, especially on longer coverts); under wing-coverts pale cinnamon-buff, those toward edge of wing deeper brownish buffy and thickly mottled with dark brown; under primary coverts pale brownish buff basally, with a large terminal subcuneate area of dusky grayish brown or brownish gray; under surface of distal primaries with inner webs dusky brownish, grayish brown, or brownish gray, with indistinct transverse spots or short bands of paler, the inner primaries and secondaries with these markings more distinct and on proximal portion much paler and more buffy (pale brownish buffy); bill pale dull yellowish (in dried skins) becoming grayish or horn color latero-basally; toes light brownish (in dried skins).

*Rufescent phase.*

*Adults (sexes alike).*—Above deep cinnamon-rufous or rufous-chestnut<sup>a</sup> to mahogany red, the pileum and hindneck streaked with black, the back sometimes narrowly streaked, rarely indistinctly spotted or mottled with paler cinnamon-rufous; outer webs of exterior scapulars mostly white, the terminal portion mottled or vermiculated with pale cinnamon-rufous and black; outermost middle wing-coverts with a large subterminal spot of white on outer web; greater coverts and secondaries paler cinnamon-rufous, the latter banded with darker, the bands more distinct toward shaft; primaries cinnamon-brown (dusky next to shaft), banded with rufous-cinnamon, the spots approaching white exteriorly on proximal half, or more, of second to fifth quills (from outside), inclusive; tail dusky, banded with cinnamon-rufous; “eyebrows” (superciliary region) mostly whitish; rest of face deep cinnamon-rufous (little, if any, paler than pileum); chin and throat cinnamon-rufous, flecked, more or less, with dusky; rest of under parts with ground color white, but this much broken by transverse vermiculations or zigzag bars of cinnamon-rufous and dark rusty brown, the rusty brown color predominating on sides of breast, each feather of breast, sides, and flanks with an irregular mesial streak of black or dark rusty brown, those on anterior portions darkest; middle of abdomen and anal region immaculate white; under tail-coverts with pairs of dark brownish irregular bars, inclosing a pale rusty brownish or rusty whitish space; legs cinnamon-rufous to dull rufous-tawny (paler on lower portion of tarsi), flecked or mottled with darker.

*Adult male.*—Length (skins), 190–203 (197); wing, 157.5–160 (158.7); tail, 81.3–81.8 (81.5); culmen, from cere, 14–14.5 (14.2); tarsus, 27.9–33.5 (30.8); middle toe, 19–20.3 (19.6).<sup>b</sup>

*Adult female.*—Length (skins), 216–250 (227); wing, 164.6–175 (170.2); tail, 86.4–88.5 (87.4); culmen, from cere, 14–15.5 (14.7); tarsus, 31.7–33 (32.1); middle toe, 21.7–24.1 (22.6).<sup>c</sup>

<sup>a</sup> About as dark as in the darkest examples of *O. asio asio*, but rather brighter or less vinaceous.

<sup>b</sup> Three specimens (sex of all doubtful).

<sup>c</sup> Four specimens (sex not determined).

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
Three adult males from Guatemala.....	158.7	81.5	14.2
Two adult males from Honduras (San Pedro Sula) ( <i>O. guatemalæ</i> ?).....	157.7	83.5	14.7
Two adult males from northern Nicaragua (Jalapa) ( <i>O. guatemalæ</i> ?).....	164	85.2	14.2
Three adult males from western Mexico ( <i>O. hastatus hastatus</i> ).....	153	79.5	11.8
Two adult males from Panama ( <i>O. vermiculatus</i> ).....	154.7	74	14.5
Two adult males of <i>O. cassini</i> .....	142	70.7	12.2



Southeastern Mexico, in States of Vera Cruz (Catemaco; Jalapa), Puebla (Zentla) ?, and Oaxaca (Chimalapa), and southward through Guatemala (Cobán; Choctúm; Cajabón; Tres Aguas; Las Salinas; Alta Vera Paz) and Honduras (San Pedro; San Pedro Sula; Tigre Island ?) to northern Nicaragua (Jalapa).

(?) *Scops* ———? SCLATER and SALVIN, Ibis, 1859, 221 (Cajabon, Guatemala; crit.).—TAYLOR, Ibis, 1860, 226 (Tigre I., Honduras).

[*Scops*] *brasilianus* (not *Strix brasiliensis* Gmelin) SALVIN and GODMAN, Nom. Av. Neotr., 1873, 117, part.

[*Scops brasiliensis*.] Subsp.  $\beta$ . *Scops guatemalæ* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 112, part (Guatemala; coll. Brit. Mus.).

*Scops guatemalæ* SHARPE, Cat. Birds Brit. Mus., ii, 1875, pl. 9, larger figure (brown phase).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 20, part (Catemaco and Jalapa, Vera Cruz; Zentla, Puebla?; Chimalapa, Oaxaca; Coban, Choctun, Las Salinas, and Cajabon, Guatemala).

[*Scops*] *guatemalæ* SHARPE, Hand-list, i, 1899, 288, part.

[*Scops brasiliensis*]  $\delta$ . *guatemalæ* RIDGWAY, Proc. U. S. Nat. Mus., i, Aug. 15, 1878, 90, 99, part (monogr.; Coban, Choctun, and Las Salinas, Vera Paz, Guatemala; Jalapa, Vera Cruz).

*Megascops brasiliensis guatemalæ* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 128.—HASBROUCK, Auk, x, 1893, 251, 263, part (Guatemala).

*Otus guatemalæ* COLE, Bull. Mus. Comp. Zool., i, Nov., 1906, 124, in text.

*Megascops marmoratus* NELSON, Auk, xiv, no. 1, Jan., 1897, 49 (Catemaco, Vera Cruz; coll. U. S. Nat. Mus.).

### OTUS HASTATUS HASTATUS Ridgway.

#### MAZATLAN SCREECH OWL.

Most nearly resembling *O. choliba*, but coloration much lighter and grayer above, with darker markings more distinct and less linear, those on pileum and hindneck in form of irregularly rhomboid or

Footnote—Continued.

Locality.	Wing.	Tail.	Culmen, from cere.
FEMALES.			
Three adult females from Guatemala.....	168.5	87	15
One adult female from Vera Cruz (Catemaco; type of <i>Megascops marmoratus</i> Nelson).....	175	88.5	14
One adult female from northern Nicaragua (Jalapa) ( <i>O. guatemalæ</i> ?).....	170	84.7	14
Three adult females from Yucatan ( <i>O. hastatus thompsoni</i> ).....	158.7	82	13.5
One adult female from western Mexico ( <i>O. hastatus hastatus</i> ).....	157	81	13
Five adult females from Costa Rica ( <i>O. vermiculatus</i> ).....	163.9	77.6	14.3
Two adult females from Panama ( <i>O. vermiculatus</i> ).....	162	78	14.7
Two adult females of <i>O. cassini</i> .....	151	76	12.7

Some of the specimens included in the above measurements were not "sexed" by the collector, but their dimensions make the sex reasonably certain.

It is not unlikely that specimens from Honduras and Nicaragua will eventually have to be separated from true *O. guatemalæ* subspecifically. They are more grayish brown above and, specimens from Nicaragua, at least, have more white on the under parts.

hastate spots; under parts much more delicately and less regularly barred, and with little, if any, ochraceous or buff on underlying portion of plumage; feet relatively smaller. (Not dichromatic?)

*Adults (sexes alike).*—General color of upper parts light grayish brown, this much broken by coarse mottling of paler (nearly brownish white on forehead and sides of crown) and very distinctly marked, especially on pileum, hindneck, and back, with irregular spots of blackish, these sometimes approaching a rhomboid or hastate form; outermost middle and greater wing-coverts with outer webs mostly white; primary coverts banded with dusky and pale brownish buffy (about four bands of each color); outer webs of primaries spotted with buffy whitish, changing to pale buffy brown on proximal quills; tail banded with grayish dusky and grayish buffy; face dull grayish white, narrowly and rather indistinctly barred with grayish brown, the outer edge tinged with pale brown and, laterally, bordered with an indistinct or broken bar of brownish black across side of head; under parts dull white, narrowly and very irregularly barred or vermiculated with dusky brown, two bars or lines of the latter color often inclosing a broader one of pale brown, especially on flanks, most of the feathers also with irregular mesial streaks of brownish black, broadest and most conspicuous on chest; legs dull whitish, barred with dusky brown.

*Adult male.*—Length (skin), 197.5; wing, 151.5–154 (153); tail, 79.5; culmen, from cere, 11.5–12 (11.8).<sup>a</sup>

*Adult female.*—Length (skin), 213.5; wing, 157; tail, 81; culmen, from cere, 13.<sup>b</sup>

Western Mexico, in States of Sinaloa (Mazatlán) and Jalisco (Mineral de San Sebastián) and Territory of Tepic.

[*Scops brasilianus*] *δ. guatemalæ* (not *Scops guatemalæ* Sharpe) RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 99–102, part (spec. from Mazatlan, Sinaloa, described on p. 101).

*Megascops hastatus* RIDGWAY, Proc. U. S. Nat. Mus., x, sig. 17, Aug. 1, 1887, 268 (type labeled "La Paz, Lower California," but almost certainly from Mazatlan, Sinaloa; coll. U. S. Nat. Mus.); Man. N. Am. Birds, 1887, 592; 2d ed., 1896, 593, 614.—HASBROUCK, Auk, x, 1893, 251, 263.

*Scops hastatus* GURNEY, Cat. Birds of Prey, 1894, 38.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 23 (Mazatlan; Tepic; Mineral de San Sebastian, Jalisco).

[*Scops*] *hastata* SHARPE, Hand-list, i, 1899, 283.

### OTUS HASTATUS THOMPSONI (Cole).

#### YUCATAN SCREECH OWL.

Very similar to *O. h. hastatus*, but averaging slightly more buffy brownish above and less densely barred or vermiculated beneath; slightly larger.

<sup>a</sup> Three specimens; two of them not sexed, but almost certainly males.

<sup>b</sup> One specimen.

*Adult male* (?)—Length (skin), 210; wing, 160; tail, 90.5; culmen, from cere, 12.5.<sup>a</sup>

*Adult female*.—Length (skins), 206–219 (212.5); wing, 157.5–160 (158.7); tail, 81.5–82.5 (82); culmen, from cere, 13.5.<sup>b</sup>

Yucatan (Chichen-Itza; Tizimín).

*Scops guatemalæ* (not of Sharpe) SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 20, part (Tizimín, Yucatan).

*Otus choliba thompsoni* COLE, Bull. Mus. Comp. Zool., 1, no. 5, Nov., 1906, 123 (Chichen-Itza, Yucatan; coll. Mus. Comp. Zool.).

### OTUS CASSINI (Ridgway).

#### CASSIN'S SCREECH OWL.

Resembling *O. hastatus hastatus* and *O. h. thompsoni* in coloration but much darker and decidedly smaller; also resembling, superficially, the grayish brown phase of *O. trichopsis*, but at once to be distinguished by much longer wing and tail and perfectly naked toes; slightly resembling *O. barbarus*, but feet conspicuously larger (tarsus more than 30, middle toe more than 20 mm.).

#### *Brown phase.*

*Adults (sexes alike)*.—Pileum sooty black, broken by small spots of light brown, larger and paler anteriorly, the posterior part of the crown with an imperfect band, or transverse patch, of much larger spots of pale wood-brown or pale brownish buff; ear-tufts with large black spots, connected along the shaft, and separated by large spots of light brown on outer webs and of pale brownish buff on inner webs; a broad and conspicuous nuchal band of pale brownish buff, mixed with dull grayish white, and varied with blackish bars, spots, and mottlings; hindneck warm-sepia brown indistinctly mottled with dusky, and minutely spotted with paler, each feather with an irregular and not sharply defined mesial spot of blackish; a broad collar across lower hindneck and upper back of pale dull buff, broken by dusky bars and mesial streaks, the buff often in the form of large roundish or transversely oblong spots; general color of remaining upper parts grayish brown, freckled and vermiculated with dusky and further variegated by irregular mesial streaks and occasional dull buffy spots and pale grayish buffy bars; outer webs of exterior row of scapulars chiefly white, very broadly tipped and more narrowly margined with black; exterior middle wing-coverts with exposed portion of outer webs white, margined internally by a broad mesial streak of black; exterior greater coverts with a large terminal or subterminal spot of

<sup>a</sup> One specimen; sex determined as male by the collector, but probably female.

<sup>b</sup> Two specimens.



buffy white; outermost feather of alula notched with large spots of white, the more basal spots pale cinnamonaceous; primary coverts spotted, in transverse series, with pale cinnamon; outer webs of primaries with large spots of pale cinnamon and buffy whitish (about six in number on longer quills), these spots about equal in extent to the mottled grayish brown interspaces on basal half, but farther apart terminally; inner webs of primaries mainly dusky, with very indistinct indications of paler bands; tail dusky continuously banded with paler, the bands pale cinnamon-brownish, mottled with dusky, on outer webs, dull grayish brown and more or less indistinct on inner webs, except on middle pair of rectrices, which have the bands light cinnamon-brown, mottled with dusky, on both webs; face dull grayish white changing to pale brownish on orbital region, narrowly and not very distinctly barred with dusky; "eyebrow" dull white, many of the feathers margined terminally with dusky; throat light tawny-brown, varied with dusky; rest of lower parts white, the feathers with distinct but irregular mesial streaks of black and narrow zigzag bars of brown and black, these bars narrower, closer together, and more brown on chest and breast, broader, farther apart, and more blackish posteriorly, the black mesial streaks broadest on sides of chest, where more or less suffused externally with pale rusty or tawny, these large black markings having the form of transverse spots connected, broadly, along the median line of the feathers; middle of abdomen and anal region immaculate buffy white; under tail-coverts buffy white, the longer ones with one or two narrow zigzag bars of brown on the terminal coverts connecting with a sagittate, cuneate, or acicular shaft-spot of blackish brown; thighs pale buff, their lower portion, especially behind, faintly freckled with rusty brown; tarsi buffy whitish, flecked with rusty brown, these markings most distinct on outer side.

*Rufous phase.*

*Adults (sexes alike).*—Above deep cinnamon-rufous becoming gradually paler posteriorly, each feather with a black mesial streak, these much broadest on crown, narrowest and almost obsolete on rump; outer webs of exterior row of scapulars white, succeeded by a broad terminal margin of black, the two colors more or less separated by a narrow extension of the rufous of the inner web; several of the outermost middle coverts with the exposed portion of the outer web chiefly white, in the form of a large subterminal spot, the tip being cinnamon-rufous, the median portion of each feather dull blackish; several of the outermost greater coverts similarly marked, the rest, together with the secondaries, paler cinnamon-rufous, very indistinctly (except on concealed portions) banded with darker; prima-

ries chiefly dusky, but outer webs broadly spotted, in transverse series, with light cinnamon-rufous, the lighter spots averaging slightly less in extent than the darker interspaces, these lighter colored spots on the third, fourth, fifth, and sixth quills about six in number (beyond primary coverts), the first three spots on these quills inclining to white; tail broadly barred or banded with dusky and cinnamon-rufous, the bands of the latter color rather narrower than the darker ones, and about six in number, not counting the incomplete basal one; face a mixture of cinnamon-rufous and white, the latter chiefly on the "eyebrows" and chin, the former mostly around the eyes; throat and foreneck cinnamon-rufous, faintly mottled with paler and sparsely flecked with dusky, especially in a line directly across the throat; sides of neck deeper and more uniform cinnamon-rufous; under parts with tawny-rufous prevailing laterally, especially on sides of breast, but white prevailing medially and posteriorly, the middle of the belly, alone, immaculate white; feathers of under parts (except on legs and under tail-coverts) marked with blackish or very dark rusty mesial irregular streaks, these very broad and quite black on breast, narrower and more rusty on flanks; on sides of breast and anterior portion of sides, where tawny-rufous prevails, this is broken by irregular mottling or spotting of whitish complicated with dark rusty irregular bars or vermiculations; on sides of abdomen, posterior portion of sides, and flanks, the white is similarly broken by very irregular, often interrupted, bars of rusty, varying in shade, but whether light or dark connected with the dusky mesial streak, these bars farther apart and more regular posteriorly; thighs light tawny or ochraceous-buff, deeper on lower portion in front, where inclining to light cinnamon-rufous; tarsi dull white transversely mottled on outer side with dull rusty.

*Adult male* (?).—Length (skins), 180–193 (186.5); wing, 139–145 (142); tail, 68–73.5 (70.7); culmen, from cere, 12–12.5 (12.2).<sup>a</sup>

*Adult female*.—Length (skin), 186; wing, 150.5–151.5 (151); tail, 75.5–76.5 (76); culmen, from cere, 12.5–13 (12.7).<sup>b</sup>

Eastern Mexico, in State of Vera Cruz (Miradór; Jalapa).

*Scops atricapillus* (not *Strix atricapilla* Temminck) RIDGWAY, in Baird, Brewer, and Ridgway, *Hist. N. Am. Birds*, iii, 1874, 48, footnote (Mirador, Vera Cruz).

[*Scops brasiliensis*] *ε. cassini* RIDGWAY, *Proc. U. S. Nat. Mus.*, i, sig. 7, Aug. 15, 1878, 90, 102 (Mirador, Vera Cruz, *ε. Mexico*; coll. U. S. Nat. Mus.).

*Scops brasiliensis*, *ε. cassini* SALVIN and GODMAN, *Biol. Centr.-Am.*, Aves, iii, 1897, 22, in text (crit.; orig. descr. quoted in footnote).

[*Scops*] *cassini* SHARPE, *Hand-list*, i, 1899, 288.

*Megascops cassini* HASBROUCK, *Auk*, x, July, 1893, 251, 262.

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<sup>a</sup> Two specimens, not sexed but almost certainly males.

<sup>b</sup> Two specimens (one not sexed).

## OTUS BARBARUS (Sclater and Salvin).

## BEARDED SCREECH OWL.

Somewhat like *O. trichopsis* in coloration (and about the same size, though with much smaller feet), but toes and lower end of tarsus entirely naked; brown phase with general color of upper parts much browner.

*Brown phase.*

*Adults (sexes alike).*—General color of upper parts deep brown (light vandyke brown to light seal brown), but this broken by rather coarse spotting of dull white to light brown, and admixture of black, the latter in form of mesial streaks confluent with lateral transverse spots or bars, these broader on pileum and hindneck, where predominating over the lighter markings; an interrupted band of white spots across upper part of nape and another across lower hindneck; outermost scapulars with outer webs mostly white, this broadly margined terminally and along inner edge with black; more distal middle and greater wing-coverts with a very large terminal spot of white on outer web; secondaries crossed by transverse series of lighter brown bars or transverse spots, the proximal primaries similarly marked, the distal primaries with much larger spots of pale brownish buff to dull white; tail dark grayish brown, crossed by an indefinite number of interrupted series of narrow transverse spots of light brown, these not reaching shaft on either web; ear-tufts transversely spotted with black (the black spots connected, broadly, along median line of the feathers), the inner webs spotted with white (sometimes mostly white); “eyebrows” (superciliary region) and lores dull white to pale brown, the feathers with black shafts, those of the former also margined with blackish; suborbital and auricular regions dull white to pale brown, broadly and rather distantly barred with blackish brown; prevailing color of under parts white, but this broken by broad black mesial streaks and black bars, the white forming large rounded spots on anterior parts, more transversely elongated spots posteriorly, the black bars on sides of flanks in pairs, inclosing between each pair a broader bar of pale brown; thighs tawny-brown to bright tawny, fading into brownish buff to white on lower part of tarsus, the thighs sometimes faintly spotted or mottled with brownish; under tail-coverts dull white to pale brownish buff, the longer ones with an irregular subterminal spot of pale brown margined posteriorly and divided medially by a line of black; anal region and center of abdomen immaculate dull white to pale brownish buff; under wing-coverts pale brownish buff (sometimes approaching dull white), sparsely mottled near edge of wing with dusky; inner webs of primaries for greater part plain grayish brown; bill horn color (in dried skins) with yellowish tomia; toes and naked lower end of tarsi light brownish (in dried skins).



*Rufous phase.*

*Adults (sexes alike).*—Above cinnamon-rufous, all the feathers, except upper tail-coverts, with broad mesial streaks of black; under parts white, the feathers with broad black shaft-streaks and broad bars of cinnamon-rufous margined with narrower bars of black.

*Adult male (?)*.—Wing, 129; tail, 66; culmen, from cere, 11.<sup>a</sup>

*Adult female.*—Wing, 135.9–144 (140.5); tail, 68.5–69 (68.8); culmen, from cere, 11.4; tarsus, 25.4; middle toe, 17.8–19 (18.2).<sup>b</sup>

Highlands of Guatemala (mountains near Santa Bárbara, Vera Paz; Baja Vera Paz; road between Cobán and Chiséc; Uspantán, Quiché).

*Scops flammeola* (not of Kaup) SALVIN, Ibis, 1861, 355 (mountains of Santa Barbara, Guatemala).

*Scops barbarus* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 56 (Santa Barbara, Vera Paz, Guatemala; coll. Salvin and Godman); Exotic Orn., pt. vii, 1868, 101, pl. 51 (2 figs.).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 107 (Santa Barbara, Vera Paz).—RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 103 (monogr.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 23 (Santa Barbara, Vera Paz).

*S[ops] barbarus* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 57.

*[Scops] barbarus* GRAY, Hand-list, i, 1869, 47, no. 494.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.

*[Scops] barbara* SHARPE, Hand-list, i, 1899, 288.

*Megascops barbarus* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 129 ("Mexico").—HASBROUCK, Auk, x, 1893, 251 262 (geog. range).

## OTUS VERMICULATUS (Ridgway).

## VERMICULATED SCREECH OWL.

Resembling, superficially, *O. guatemalæ*, but lower portion of tarsus naked <sup>c</sup> (the feathering gradually becoming shorter toward lower portion of tarsus), tail relatively much shorter, and coloration much more uniform, the upper parts with vermiculations finer and usually without distinct spots or streaks, the under parts usually more densely vermiculated; eyebrow never whitish (always brown or chestnut-rufous).

*Brown phase.*

*Adults (sexes alike).*—Above mars brown to russet-brown, densely vermiculated with dusky, but without streaks, except, sometimes, on crown, where, however, the blackish markings are more often in form of irregular small spots; outer webs of exterior scapulars irregularly spotted or blotched with white or buffy white, this sometimes occupying greater part of outer web, the terminal portion of which

<sup>a</sup> One specimen, not sexed, but small size almost certainly indicating a male.

<sup>b</sup> Four specimens (three not sexed).

<sup>c</sup> On account of this character I find several specimens identified as *O. nudipes*!

is variously marked with black and light brown; a large subterminal spot of white on outer webs of outermost middle and greater wing-coverts; primary coverts dusky, with more or less distinct bands, or transverse spots, of tawny-brown; secondaries and inner primaries crossed by bands of lighter tawny-brown or cinnamon-brown, these bands, like the darker interspaces, mottled or vermiculated with grayish dusky, and margined by a more or less distinct line of dusky; outer webs of longer primaries cinnamon-brown passing into dusky next to shaft, and with large, nearly semicircular spots of light cinnamon-brown which on proximal half or more of quills pass exteriorly into white; tail mottled cinnamon-brown and dusky, crossed by narrow bands of light cinnamon-brown or brownish cinnamon, these bands sometimes irregular or broken on middle rectrices; entire face (including "eyebrows") and sides of neck brown, like color of upper parts, narrowly barred with dusky; no distinct, if any, darker (or otherwise different) facial rim or border; under parts with ground color of anterior half (approximately) pale brown coarsely but densely vermiculated with dusky brown, the breast sometimes with rather indistinct irregular mesial streaks of dusky; rest of under parts similarly but less densely vermiculated on a white ground, the dark brown vermiculations sometimes intermixed with irregular V-shaped bars of the same color; legs light buffy brown or pale cinnamon-brown, more deeply cinnamonaceous on thighs, and heavily barred, or transversely mottled, with deep to dark brown; bill pale dull yellowish (in dried skins), with latero-basal portion grayish or horn color; toes and lower part (unfeathered) of tarsus light brownish (in dried skins).

*Rufous phase.*

*Adults (sexes alike).*—Head, sides of neck, and upper parts uniform bright chestnut or rufous-chestnut, the crown sometimes with very indistinct streaks of dusky; outer webs of exterior scapulars and outermost middle and greater wing-coverts marked with white, as in the brown phase; outer webs of longer primaries with large spots of white which pass into cinnamon-rufous on inner portion, the proximal primaries, secondaries, and primary coverts showing very indistinct bands of darker, or faint indications of such bands; tail with indistinct darker bands, these distinct only on inner web, however; chin, throat, and chest cinnamon-rufous irregularly barred and vermiculated with buffy or rusty whitish; rest of under parts white or rusty white, profusely vermiculated with brown or russet, the vermiculations assuming the form of irregular but well-defined bars on flanks, etc.; legs pale rusty or dull rusty whitish, barred or transversely mottled (mostly on outer side of tarsus) with brown or chestnut; bill, etc., as in the brown phase.

*Adult male*.—Length (skin), 191; wing, 153.5–156 (154.7); tail, 71–77 (74); culmen, from cere, 14.5.<sup>a</sup>

*Adult female*.—Length (skins), 195–228 (215); wing, 160.5–165 (163.2); tail, 71–83 (77.6); culmen, from cere, 13.5–15.5 (14.4).<sup>b</sup>

Costa Rica (La Candelária; Jiménez; Carrillo; La Palma de San José) and Panamá (Divala, Chiriquí; Calovévora, Chitra, and Calobre, Verágua; Frijole, Canal Zone; Cana, Darién); southward through western Colombia to western Ecuador (Vinces)?<sup>c</sup>

*Scops brasilianus* (not *Strix brasiliiana* Gmelin) SALVIN, Proc. Zool. Soc. Lond., 1870, 216 (Calovevora, Chitra, and Calobre, Veragua, Panama).

[*Scops*] *brasilianus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117, part.

[*Scops brasilianus*.] Subsp.  $\beta$ . *Scops guatemalæ* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 112, part (Veragua; Costa Rica).

*Scops guatemalæ* SHARPE, Cat. Birds Brit. Mus., ii, 1875, pl. 9, smaller figure (rufous phase).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 20, part (San José and La Palma de San José, Costa Rica; Calobre, Chitra, Calovevora, and Lion Hill, Panama; w. Ecuador?).

(?)? *Scops guatemalæ* SALVADORI and FESTA, Boll. Mus., Zool., etc., Torino, xv, 1900, 33 (Vinces, w. Ecuador; crit.).

[*Scops*] *guatemalæ* SHARPE, Hand-list, i, 1899, 288, part (Panama; w. Ecuador?).

[*Scops brasilianus*]  $\delta$ . *guatemalæ* RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 90, 99, part (Chiriqui, Panama; Chitra and Calovevora, Veragua, Panama; Costa Rica).

*Megascops vermiculatus* RIDGWAY, Proc. U. S. Nat. Mus., x, sig. 17, Aug. 1, 1887, 267 (Costa Rica; coll. U. S. Nat. Mus.).—ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 125 (Costa Rica).—HASBROUCK, Auk, x, 1893, 264 (geog. range).—BANGS, Auk, xviii, 1901, 358 (Divala, Chiriqui, Panama).

*Scops vermiculatus* GURNEY, Cat. Birds of Prey, 1894, 38.

*Otus vermiculatus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 475 (La Candelaria, Costa Rica; crit.).

<sup>a</sup> Two specimens from Panama.

<sup>b</sup> Seven specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
One adult male from eastern Panama (upper Río Trinidad).....	153.5	77	14.5
One adult male from western Panama (Divala).....	156	71	14.5
FEMALES.			
Two adult females from eastern Panama (Cana).....	162	78	14.7
Five adult females from Costa Rica.....	163.9	77.6	14.3

<sup>c</sup> I have not seen specimens from either Colombia or Ecuador. There is a specimen in the U. S. National Museum, the alleged locality of which is, according to the original label, "Toyabáj, Quiché," Guatemala; but as the collector from whom the specimen was procured collected both in Guatemala and in Panama, I am convinced that a mistake has been made, probably by transposition of labels, since the specimen agrees strictly in coloration and other characters with examples of the present form from Panama and Costa Rica.



## OTUS NUDIPIES (Vieillot).

## BARE-LEGGED SCREECH OWL.

Lower third or more of tarsus, as well as toes, completely naked; size large (wing 177–190.5 mm.).

*Adults (sexes alike).*—General color of upper parts brown (cinnamon-brown to almost tawny, the color lighter and inclining more to tawny on pileum and hindneck), conspicuously vermiculated, mottled, and spotted with black, the spots on pileum often fused and forming irregular broad streaks; outer webs of outermost scapulars white, mottled at tip with black and light brown, often edged along inner margin with a black streak; distal middle and greater wing-coverts with large subterminal irregular spots of white or pale buffy; secondaries and proximal primaries with transverse series of light cinnamon transverse spots, these, as well as the darker interspaces mottled or irregularly vermiculated with dusky; distal primaries with larger and mostly immaculate spots of paler cinnamonaceous, the dark interspaces also mostly immaculate; tail with transverse series of narrow, irregular, mottled bands of cinnamon-brown, these sometimes scarcely if at all interrupted; ear-tufts similar in coloration to pileum, but inner webs sometimes with light cinnamonaceous predominating; “eyebrow” usually tawny or cinnamon (more or less deep)—rarely whitish—the feathers margined terminally with black and with black shafts; lores cinnamon or tawny, with black shafts; suborbital and auricular regions cinnamon to deep tawny or russet, rather broadly barred with blackish, the bars becoming broader posteriorly; no well-defined “facial rim” or border; malar region, chin, and throat cinnamon, tawny, or russet, sometimes immaculate, but usually with blackish shaft-streaks; rest of under parts mixed light brown to tawny and buffy white (the latter predominating posteriorly, the former prevailing anteriorly), the brown or tawny irregularly barred with black (the feathers with black shaft-streaks also, these usually largest, sometimes spot-like, on breast), the whitish mostly immaculate and in form of rounded or transverse spots; feathering of thighs and upper half of tarsi varying from clear, nearly immaculate, tawny or tawny-ochraceous to light buffy brown heavily barred or transversely clouded with darker brown; under tail-coverts white or buffy white with an irregular subterminal bar of tawny or light brown, usually edged with a black line; under wing-coverts dull buffy, usually mostly immaculate but often more or less clouded or mottled with brown, those toward edge of wing mottled or spotted with dark brown; under surface of inner webs of primaries for the greater part plain deep grayish brown, but the basal portion (especially on inner primaries) with larger but not very strongly contrasted transverse spots of pale dull buffy; bill light yellowish, darker on lateral basal

portions (yellowish green in life); <sup>a</sup> iris lemon yellow; <sup>a</sup> toes and naked portion of tarsi flesh color (in life).<sup>a</sup>

*Adult male*.—Length (skins), 240–247 (243); wing, 177–187.5 (183.1); tail, 97–99 (98.8); culmen, from cere, 13–14 (13.5).<sup>b</sup>

*Adult female*.—Length (skins), 230–268 (249.3); wing, 177.8–190.5 (183); tail, 92.7–106 (98.3); culmen, from cere, 12.5–16 (14.4).<sup>c</sup>

Costa Rica (Volcán de Irazú; Volcán de Turrialba; Azahár de Cartago; La Estrella de Cartago; La Estrella de Mojón; San Pedro de Mojón; El Zarcero de Alajuela; La Carpintera; Santa Ana; Cervantes; San José; Escazú; Carrillo), and Panamá (Calobre, Veragua; Mt. Pirrí, Darién); Colombia?

*Bubo nudipes* VIEILLOT, Ois. Am. Sept., i, 1807, 53, pl. 22 ("Greater Antilles;" coll. Vieillot).

*Scops nudipes* CUVIER, Règne Anim., ed. 2, i, 1829, 347.—SCLATER, Proc. Zool. Soc. Lond., 1858, 133.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 367 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 216 (Calobre, Veragua, Panama).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 121.—RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 89 (monogr.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 25 (La Carpintera, Cervantes, El Zarcero de Alajuela, Volcan de Irazú, Santa Ana and San José, Costa Rica; Calobre, Panama; Colombia).

*S[cops] nudipes* SCLATER, Proc. Zool. Soc. Lond., 1868, 57.

*[Scops] nudipes* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.

*E[phialtes] nudipes* GRAY, Gen. Birds, i, 1844, 38.

*Acnemis nudipes* BONAPARTE, Rev. et Mag. de Zool., 1854, 542.

*Megascops nudipes* ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 125 (El Zarcero de Alajuela).—CHERRIE, Auk, ix, 1892, 327 (San José, Costa Rica).—HASBROUCK, Auk, x, 1893, 251, 252 (geog. range).

*Otus nudipes* CARRIKER, Ann. Carnegie Mus., vi, 1910, 476 (Volcan de Turrialba, La Carpintera, La Estrella de Mojon, La Estrella de Cartago, Escazu, and Carrillo, Costa Rica).

*[Psilosops] nudipes* SHARPE, Hand-list, i, 1899, 289.

*Strix psilopoda* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 46 (said to be from Santo Domingo and Porto Rico; cites Ois. Am. Sept., pl. 22).

*[Scops] psilopoda* GRAY, Hand-list, i, 1869, 47, no. 491.

### OTUS FLAMMEOLUS (Kaup).

#### FLAMMULATED SCREECH OWL.

Smallest American species of the genus (wing 128–144 mm.), with very small feet, perfectly naked toes, outermost primary longer than secondaries, short (almost rudimentary) ear-tufts, and brown iris.

<sup>a</sup> José C. Zeledón, on label.

<sup>b</sup> Four specimens.

<sup>c</sup> Five specimens. (Four adult females from Costa Rica have the culmen 12.5–15.2, averaging 14; one from Mt. Pirrí, eastern Panama, has the culmen 16 mm.)

*Grayish phase.*

*Adults (sexes alike).*—Above mixed brown and gray, vermiculated with dusky, the feathers, at least on back, scapulars, and (usually) the crown with blackish mesial streaks or spots; a more or less distinct broken collar of white or pale buffy spots across lower hindneck, and, often, a more or less distinct band of finely vermiculated light gray, or small whitish spots, across occiput; outer webs of exterior scapulars ochraceous-buff or tawny-ochraceous externally, passing into buffy white internally, next to a distinct (sometimes broad) black mesial streak; outer webs of outermost middle and greater wing-coverts with a large subovate terminal or subterminal spot of ochraceous-buff (something partly white); outer webs of primaries with large spots of buffy white; orbital region, at least in part, cinnamon to deep brown; rest of face grayish white narrowly barred with dusky; facial circle (more or less distinct) bright cinnamon or rufescent brown, sparsely spotted with black, or mostly unbroken black, the portion crossing throat usually cinnamon or light cinnamon-rufous (never black); under parts white, vermiculated or irregularly barred with black and with irregular or ragged black mesial streaks, these varying greatly in width but always broader on each side of the median line, especially on sides of breast, where (as well as sometimes those farther backward) the webs on each side the black streak or spot are partly cinnamon or cinnamon-rufous; legs dull white to dull pale buff, deepening on thighs into cinnamon-buff or light buffy brown, more or less barred with dusky; axillars and under wing-coverts plain dull light brownish buffy, the coverts just inside of edge of wing more or less thickly barred or spotted with dusky; bill grayish horn color (in dried skins) with yellowish tip and tomia; iris deep brown; toes brownish (in dried skins).

*Young.*—Remiges and rectrices (if developed) as in adults; upper parts barred (most distinctly on pileum) with grayish white, or pale grayish, and dusky, but without any longitudinal streaks; under parts dull white or grayish white, broadly barred with dusky gray or grayish dusky, the bars narrower and denser anteriorly, broader and farther apart posteriorly.

*Rufescent phase.*

*Adults (sexes alike).*—General color of upper parts cinnamon-brown instead of grayish, the pileum without blackish streaks, except a few on forehead; face (except "eyebrows" or superciliary region) wholly bright cinnamon or light cinnamon-rufous; anterior under parts strongly suffused with cinnamon; otherwise like the grayish phase,



but pencilings on under parts less dense, the bars or transverse vermiculations less numerous and the mesial streaks less distinct.<sup>a</sup>

*Adult male*.—Length (skins), 146–171 (156); wing, 128–138 (132.9); tail, 58–63.5 (59.7); culmen, from cere, 8.5–10 (9.5).<sup>b</sup>

*Adult female*.—Length (skins), 157–177 (165); wing, 128.5–144 (135.2); tail, 58–67 (62.2); culmen, from cere, 8.5–10 (9.3).<sup>c</sup>

Mountains of western North America (Sierra Nevada and Cascade ranges to Rocky Mountains), Mexico, and Guatemala; northward to southern British Columbia (Okanogan Lake), eastern Washington (Snake River east of Pasco) and Idaho (Ketchum), thence southward through Colorado (Estes Park; Boulder County; Fremont County; near Mosca Pass; between Colorado City and Manitou; Bear Creek Canyon, Jefferson County; Breckinridge; Glenwood Springs; near Beulah, 7,200–7,800 feet), New Mexico (Big Hatchet Mountains; Mimbres; Santa Fe; Iron Creek, Gila River), western Texas (Guadalupe Mountains; Presidio County), Arizona (Huachuca Mountains, 4,500–8,000 feet; Chiricáhua Mountains; Santa Catalina Mountains, 8,000 feet; Springerville; San Pedro River, Cochise County; Grand Canyon; near Apache), California (Fort Crook; Big Trees, Calaveras County; Tulare County; Raywood Flat, San Gorgonio Mountains;

<sup>a</sup> The individual variation in this species is so great that it is somewhat difficult to frame a description covering them all. The variations involve not only the general color (extreme examples of the grayish phase being without a trace of cinnamonaceous or ochraceous color, except the partly buffy outer webs of exterior scapulars, while extremes of the rufescent phase have cinnamon-brown and cinnamon-rufous the predominant colors), but also the size of the darker markings on the under parts, which may consist of delicate pencilings or heavy spots and bars. So far as I am able to see, these variations are utterly without geographic significance, except that the extreme rufous phase is, at present, known only from Guatemala, where, however, specimens occur which I am unable to distinguish from northern examples.

<sup>b</sup> Twelve specimens.

<sup>c</sup> Fourteen specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
One adult male from Guatemala.....	128	58	9
Two adult males from New Mexico.....	131.7	58.5	9.5
Five adult males from Arizona.....	133.9	59.9	9.9
Three adult males from southern California.....	134	57.2	9.5
One adult male from Idaho (type of <i>Megascops flammeola idahoensis</i> ).....	132	61	8.5
FEMALES.			
Two adult females from western Texas.....	134.5	61.7	9
One adult female from New Mexico.....	133	58.5	8.5
Eight adult females from Arizona.....	135	62.4	9.6
Two adult females from Colorado.....	133.8	63.5	9.2
One adult female from eastern Washington.....	144	63	9

Bluff Lake, etc., San Bernardino Mountains, 5,000–7,500 feet), (Mexico (near City of Mexico; Chimalpa), and Vera Cruz (San Antonio Coapa; Jalapa) to Guatemala (Tecpám; Dueñas; Cerro de Paraimo).

[*Ephialtes*] *flammeola* LICHTENSTEIN, Nom. Mus. Berol., 1854, 7 (Mexico; *nomen nudum*!).

*Scops flammeola* KAUP, Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 226 (Mexico; coll. Berlin Mus.).—SCLATER, Proc. Zool. Soc. Lond., 1858, 96 (Jalapa, Vera Cruz), 133 (s. Mexico); 1864, 178 (near City of Mexico).—SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Oti), 1863, 27; no. 36 (Revue), 1873, 14.—SCLATER and SALVIN, Exotic Orn., pt. vii, 1868, pl. 50, and text.—ELLIOT, Illustr. New and Unfig. N. Am. Birds, i, 1869, pl. 28, and text.—BAIRD, in Cooper, Orn. Calif., 1870, 422 (Ft. Crook, California).—COUES, Check List, 1873, no. 319; Birds Northwest, 1874, 304, footnote (synonymy).—RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 58.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 135 (30 miles south of Apache, Arizona); Zool. Exped. W. 100th Merid., 1875, 406 (south of Apache, Arizona).—RIDGWAY, Field and Forest, ii, 1877, 210 (Boulder Co., Colorado); Orn. 40th Parallel, 1877, 335, in text (Nevada, California?).—DEANE, Bull. Nutt. Orn. Club, iv, 1879, 188 (Fremont Co., Colorado).—INGERSOLL, Bull. Nutt. Orn. Club, v, 1880, 121 (near Mosca Pass, Colorado).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 24 (Valley of Mexico; Chimalpa, San Antonio Coapa, Jalapa, and Alpine zone, Vera Cruz; Dueñas and Cerro de Paramos, Guatemala; California; Nevada; Colorado; Arizona).

[*Scops*] *flammeola* GRAY, Hand-list, i, 1869, 47, no. 489.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.

*S[scops] flammeola* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 57, fig. 1.—COUES, Key N. Am. Birds, 2d ed., 1884, 506.

*Scops flammeolus* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 105 (Dueñas, Guatemala; Valley of Mexico; w. Mexico).—RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 104 (monogr.); iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 404.—COUES, Check List, 2d ed., 1882, no. 471.—BELDING, Proc. U. S. Nat. Mus., v, 1883, 549 (Big Trees, Calaveras Co., California).—BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 123 (between Colorado City and Manitou, and near Mosca Pass, Colorado).

*Megascops flammeolus* STEJNEGER, Auk, ii, April, 1885, 184.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 374.—MERRIAM, North Am. Fauna, no. 3, 1890, 39 (Grand Cañon of Colorado R.).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 374, pl. 12, fig. 15 (egg).—HASBROUCK, Auk, x, 1893, 251, 260 (geog. range).—SMITH (H. G.), Auk, x, 1893, 364 (Bear Creek Cañon, Jefferson Co., Colorado, July 17).—OBERHOLSER, Ornith., x, no. 1, 1899, 4 (Presidio Co., Texas, etc.; monogr.).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 9 (Huachuca Mts., Arizona, 4,500–8,000 ft., breeding at 8,000 ft.).

*M[egascops] flammeolus* RIDGWAY, Man. N. Am. Birds, 1887, 262.

*Megascops flammeola* PALMER (E. D.), Auk, xi, Jan., 1894, 78 (San Bernardino Mts., California, 5,000 ft., May 26).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 374.—INGRAHAM, Auk, xiv, 1897, 403 (near Beulah, Colorado, 7,200–7,800 ft., breeding).—COOKE, Birds Colorado, 1897, 78 (main front range Rocky Mts., Estes Park to San Luis Valley, 7,500–10,000 ft.; Colorado records); Bull. 44, Col. Agric. Exp. Sta., 1898, 161 (Santa Fé, New Mexico; Huachuca Mts., Arizona, Aug. 24; Beulah, Colorado, breeding; near Boulder, Colorado, Sept. 22); Bull. 29, 1900, 206 (near Beulah, under 7,000 ft., 6 specs., breeding; Colorado Springs, 2 specs.; Breckenridge, Oct. 4).

- Megascops flammeola flammeola* GRINNELL (J.), Pacific Coast Avifauna, no. 3, June, 1902, 35 (California range).
- Otus flammeola* STONE, Auk, xx, July, 1903, 275.—DILLE, Auk, xxvi, 1908, 87 (Estes Park, Colorado, breeding).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372.—CARY, Auk, xxvi, 1909, 181 (Glenwood Springs, Colorado).—WILLARD, Condor, xi, 1909, 199-202 (Ramsey Cañon, Huachuca Mts., Arizona, 7,700 ft., breeding).—HENDERSON, Univ. Colo. Stud. Zool., vi, 1909, 230 (Colorado, many records; breeding in Estes Park).—COOKE, Auk, xxvi, 1909, 412 (Ft. Lewis, Glenwood Springs, and Estes Park, Colorado).—WARREN (E. R.), Condor, xii, 1910, 31 (Colorado records).
- Otus flammeolus* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 84 (Tecpam, Guatemala).—VISHER, Auk, xxvii, 1910, 281 (Santa Catalina Mts., Arizona, 8,000 ft.).
- Otus flammeolus flammeolus* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 174.—WILLETT, Pacific Coast Avifauna, no. 7, 1912, 52 (near San Bernardino, California, Jan. 18; San Bernardino Mts., 5,000 ft., May 26; San Gorgonio Peak, breeding; Bluff Lake, San Bernardino Mts., 7,500 ft., breeding; crit.).—BERGTOLD, Auk, xxix, 1912, 332 (Iron Creek, Gila R., New Mexico).
- [*Psiloscops*] *flammeola* SHARPE, Hand-list, i, 1899, 289.
- Megascops flammeolus idahoensis* MERRIAM, North Am. Fauna, no. 5, July 30, 1891, 96, pl. 1 (Ketchum, Idaho; coll. U. S. Nat. Mus.); Auk, ix, 1892, pl. 2.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, viii, 1892, 105.—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 376.—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 35 (San Bernardino Mts. and San Gorgonio Peak, California).—GILMAN, Condor, iv, 1902, 86 (Raywood Flat, San Gorgonio Mts., California, breeding).—HASBROUCK, Auk, x, 1893, 251, 261 (geog. range).—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 593.—OBERHOLSER, Ornith., x, no. 1, 1899, 34 (monogr.).
- Megascops idahoensis* PALMER (W.), Nidologist, iii, May, 1896, 103 (crit.).
- Megascops flammeola idahoensis* AMERICAN ORNITHOLOGISTS' UNION, Check List, 2d ed., 1895, no. 374a.
- Otus flammeola idahoensis* STONE, Auk, xx, July, 1903, 275.—GRINNELL (J.), Univ. Calif. Pub. Zool., v, 1908, 59 (Bluff Lake and Dry Lake, San Bernardino Mts., California, June, July; crit.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 372.—BROOKS, Auk, xxvi, 1909, 61 (Okanogan Lake, Brit. Columbia).
- Otus flammeolus idahoensis* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 174.
- Scops idahoensis* GURNEY, Cat. Birds of Prey, 1894, 38.
- [*Scops*] *idahoensis* SHARPE, Hand-list, i, 1899, 288.

#### Genus LOPHOSTRIX LESSON.

- Lophostrix* LESSON, Compl. Buffon, vii, 1836, 261. (Type, *Strix cristata* Daudin.)
- Lophostrix* (emendation) SUNDEVALL, Met. Nat. Av. Disp. Tent., 1872, 105.

Medium-sized Bubonidæ (wing about 365-415 mm.) with very long ear-tufts, external ear-openings relatively small, simple, non-operculate, and symmetrical; completely naked toes, and tail much more than half as long as wing.

Bill moderately stout, with chord of culmen greater than length of cere on top, the latter slightly arched basally. Nostril nearly circular, in anterior edge of cere, the latter more or less inflated or elevated



around posterior margin of nostril. Wing long, the longest primaries exceeding the distal secondaries by more than one-third the total length of wing; sixth and seventh<sup>a</sup> primaries longest, the tenth (apparent outermost) shorter than the ninth<sup>b</sup>; six outer primaries with inner webs sinuated; primaries straight and relatively rather narrow distally. Tail much more than half as long as wing, slightly rounded. Tarsus about as long as middle toe with claw, densely feathered (all round) to base of toes, the latter completely naked. Ear-tufts very conspicuous, composed of long and relatively narrow, tapering plumes.

*Coloration*.—Above sepia brown to russet, finely and rather indistinctly vermiculated with dusky, sometimes nearly black on pileum and auricular region; wing-coverts (sometimes remiges also) more or less spotted with white; under parts vermiculated with brown and whitish or pale fulvous, but without distinct streaks or spots; ear-tufts and superciliary region partly white or pale fulvous.

*Range*.—Southeastern Mexico to Amazon Valley. (Two species, with additional subspecies ?.)

#### KEY TO THE SPECIES OF LOPHOSTRIX.<sup>c</sup>

- a. Face (orbital, auricular, and loreal regions) wholly rusty brown (deep cinnamon-rufous or chestnut-rufous.) (Guianas and Amazon Valley.)

***Lophostrix cristatus*** (extralimital).<sup>d</sup>

- aa. Face only partly rusty, the orbital region and terminal portion of auricular region black or dusky. (Panama to southern Mexico.)

***Lophostrix stricklandi*** (p. 733).

#### LOPHOSTRIX STRICKLANDI Sclater and Salvin.

##### STRICKLAND'S OWL.

Similar to *L. cristatus*<sup>d</sup> but face only partly rusty or rufescent (the orbital region and terminal portion of auricular region being black or dusky) and general color either much darker or less rufescent.

<sup>a</sup> Fourth and fifth from outside not counting the rudimentary and concealed eleventh (first) primary.

<sup>b</sup> Second from outside.

<sup>c</sup> Owing to paucity of material of the South American form, I am not able to make a satisfactory comparison between it and *L. stricklandi*; but judging from the single specimen of the former that I have been able to examine (an adult female in the rufous phase), I believe the two forms are only subspecifically distinct, and that, therefore, the northern form should be called *Lophostrix cristatus stricklandi*.

<sup>d</sup> *Strix cristata* Daudin, *Traité d'Orn.*, ii, 1800, 207 (Guiana; coll. Mus. Paris; based on *La Chouette à aigrette blanche* Levaillant, *Ois. d'Afr.*, etc., i, pl. 43).—*Lophostrix cristata* Gray, *List Accip. Brit. Mus.*, 1844, 47; Kaup, *Jardine's Contr. Orn.*, 1852, 115 (monogr.).—*E[phialtes] cristatus* Gray, *Gen. Birds*, i, 1844, 38.—*B[ubo] cristatus* Kaup, *Isis*, 1848, 770.—*Bubo cristatus* Kaup, *Trans. Zool. Soc. Lond.*, iv, 1859, 238.—*Scops cristatus* Strickland, *Orn. Syn.*, i, 1855, 205; Sharpe, *Cat. Birds Brit. Mus.*, ii, 1875, 122.—*Str[ix] griseata* Cuvier, *Règne Anim.*, i, 1829, 344 (Guyane).—*Syrnium griseatum* Lesson, *Traité d'Orn.*, 1831, 113.—*Lophostrix griseata* Lesson, *Compl. Buffon*, vii, 1836, 261.

*Paler phase.*

*Adults (sexes alike).*—General color of upper parts snuff brown to cinnamon-brown, darker anteriorly, paler posteriorly, the whole surface (except, sometimes, the pileum) freckled or vermiculated with darker; anterior portion of forehead, long ear-tufts, and a superciliary stripe connecting the two, white or buffy white, the outer webs of ear-tuft feathers more or less freckled with brown or dusky; exterior scapulars with irregular, usually large, blotches of white or buffy white on outer webs, and distal middle and greater wing-coverts with large terminal spots of the same, at least on outer web; outer webs of rectrices and proximal secondaries without distinct (if any) bands, but distal secondaries with more or less distinct bands of dull brownish buff, light tawny-ochraceous, or cinnamon-buff; outer webs of primaries with large transverse spots (touching shafts) of dull buff or cinnamon-buff, these becoming paler buffy distally; inner webs of rectrices with distinct bands of dull buff or cinnamon-buff, these becoming narrower and less distinct toward tip of tail; bristly loreal feathers dull white (sometimes tinged or suffused with rusty) with conspicuously black shafts; feathers immediately surrounding eye black; suborbital region and anterior portion of auricular region deep tawny or rufescent tawny, the lateral half or more of the latter brownish black or dusky or else much darker rusty brown than anterior portion; under parts a mixture of white (passing into buffy posteriorly) and pale buffy brown, nearly everywhere irregularly vermiculated with dusky, the pencilings finer and denser anteriorly, coarser and farther apart posteriorly, the anal region and under tail-coverts immaculate light buffy or else the latter with only a few irregular bars of brown or dusky; under wing-coverts deep buff or ochraceous-buff, more or less barred or otherwise marked with dark brown or dusky toward edge of wing; under surface of remiges grayish brown crossed by very distinct bands of deep buff, these becoming indistinct distally; bill dull light yellowish with tomial half (approximately) of both maxilla and mandible horn color or dusky; iris yellow; naked toes pale brownish (in dried skins).

*Dark phase.<sup>a</sup>*

*Adults (sexes alike).*—More or less conspicuously darker than the light phase, the general color of upper parts varying from vandyke brown to sooty brown, passing into uniform dark sooty brown or sooty black on hindneck and pileum; face mostly sooty black, there being only a relatively small space of rusty brown on suborbital region alone;

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<sup>a</sup> Possibly a subspecies, peculiar to the Atlantic coast district, from Vera Cruz, Mexico, to eastern Costa Rica, since all specimens seen by me are from that geographic area, while the lighter colored ones are mainly, if not entirely, from the Pacific side (Chiapas, Mexico, to Panama).

under parts much darker (the white sometimes wholly replaced by ochraceous), the brown vermiculations heavier or denser, the whole chest (sometimes breast also) occasionally brown or tawny-brown with darker vermiculations; legs heavily mottled with brown.

*Adult male*.—Length (skins), 372–400 (384); wing, 303–310 (307.5); tail, 175–186.5 (179.2); culmen, from cere, 18–20 (18.7).<sup>a</sup>

*Adult female*.—Length (skins), 365–413 (408); wing, 298–320 (306.6); tail, 169.5–182.5 (176.5); culmen, from cere, 18–20 (19).<sup>b</sup>

Southern Mexico, in States of Vera Cruz (Miradór), Oaxaca (Villa Alta; Cacoprieto) and Chiapas (San Bartolomé) and southward, through Guatemala (Cobán; Vera Paz; Escuintla; San Pedro Martir) and Costa Rica (Rio Sísola, Talamanca; El Hogár; San Carlos; Santa Ana; San José; Escazú; Santo Domingo de San Mateo; Lagarto; Pozo Azul de Pirris; Volcán de Irazú) to Panamá (Boquete, Divala, and Boquerón, Chiriquí; Santa Fé, Bugaba, and Vivalá, Verágua; Natá, Coclé; Cana, Darién).

*Scops cristata* . . . var. STRICKLAND, Jardine's Contr. Orn., 1848, 60–7, pl. 10 (Coban, Guatemala; crit.).

*Lophostrix stricklandi* SCLATER and SALVIN, Ibis, 1859, 221 (Vera Paz, Guatemala; coll. H. Strickland).—SALVIN, Proc. Zool. Soc. Lond., 1867, 158 (Santa Fe, Veragua, Panama); 1870, 216 (Bugaba, Veragua); Ibis, 1874, 99 (Escuintla, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (San Jose, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 367 (Costa Rica).—BOUCARD, Liste Ois. récol. Guat., 1878, 22 (Guatemala); Proc. Zool. Soc. Lond., 1878, 45 (San Carlos, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 125 (San Jose and Santa Ana, Costa Rica).—CHERRIE, Auk, ix, 1892, 327 (San Jose); Expl. Zool. Merid. C. R., 1893, 50 (Lagarto, s. w. Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 14 (Villa Alta and

<sup>a</sup> Six specimens.<sup>b</sup> Eight specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
Four adult males from Panama.....	306.5	180.4	18.7
Two adult males from Costa Rica.....	309.5	176.7	18.7
FEMALES.			
Three adult females from Panama.....	307.3	173.5	18.7
Four adult females from Costa Rica.....	307	178.8	19
One adult female from Chiapas (San Bartolome).....	303	178.5	20
SEX NOT DETERMINED.			
One adult from w. Panama (Veragua).....	287	171	18
One adult from Costa Rica.....	312	173	20
One adult from Vera Cruz (Mirador).....	303	180	19

Great differences in coloration are seen in the series examined; but without a much larger number of specimens, and especially in the absence of the type specimen or topotypes, it would be useless to conclude whether these variations represent simply individual or phase differences or are geographical.



Cacoprieto, Oaxaca; Coban and San Pedro Martir, Guatemala; San Jose, etc., Costa Rica; Vivala, etc., Panama).—BANGS, Auk, xviii, 1901, 358 (Divala, Chiriqui, Panama).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 476 (San José, Pozo Azul de Pirris, Santo Domingo, Escazu, Rio Sicsola, and El Hogar, Costa Rica).

[*Lophotrix*] *stricklandi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.—SHARPE, Hand-list, i, 1899, 289.

[*Scops*] *stricklandi* GRAY, Hand-list, i, 1869, 47, no. 499.

*Scops stricklandi* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 124.

### Genus BUBO Duméril.

*Bubo* DUMÉRIL, Zool. Analytique, 1806, 34. (Type, by tautonomy, *Strix bubo* Linnæus.)

*Ascalaphia* GEOFFROY ST. HILAIRE, L'Écho du monde savant, 4<sup>e</sup> année, Jan. 7, 1837, 4 (nomen nudum here? but later authors give type as *Bubo ascalaphus* Savigny).

(?) *Huhua* HODGSON, Asiat. Researches, xix, 1836, 173. (Type, *Bubo nipalensis* Hodgson.)

*Heliaptex* SWAINSON, Classif. Birds, ii, 1837, 217. (Type, *Strix (Bubo) arctica* Swainson.)

(?) *Urrua* HODGSON, Journ. Asiat. Soc. Bengal, vi, 1837, 372. (Type, *Otus bengalensis* Franklin).

*Byas a* MORRIS, in N. Wood's Naturalist, ii, no. 9, June, 1837, 123. (Type, *B. nobilis* Morris=*Strix bubo* Linnæus.)

(?) *Etoglaur* HODGSON, Journ. Asiat. Soc. Bengal, x, 1841, 28. (Type, *Bubo nipalensis* Hodgson.)

(?) *Mesomorpha* HODGSON, Journ. Asiat. Soc. Bengal, x, 1841, 28. (Type, *Otus bengalensis* Franklin.)

*Aibryas* GLOGER, Handb. Naturg., 1842, 223. (Type, *Strix (Bubo) arctica* Swainson.)

*Nyctæus* GLOGER, Handb. Naturg., 1842, 223. (Type, *Strix lactea* Temminck.)

*Megaptynx* BONAPARTE, Rev. et Mag. de Zool., vi (2), 1854, 542. (Type, "*Strix magellanicus* Gmelin"—*Bubo magellanicus* Daudin.)

*Pachyptynx* BONAPARTE, Rev. et Mag. de Zool., vi (2), 1854, 542. (Type, *Strix lactea* Temminck.)

*Nisuela* BONAPARTE, Rev. et Mag. de Zool., vi (2), 1854, 542. (Type, *Strix maculosa* Vieillot.)

(?) *Ptiloskelos* TICKELL, Journ. Asiat. Soc. Bengal, xxviii, 1859, 448. (Type, *Bubo nipalensis* Hodgson.)

Large to very large Bubonidæ (wing about 350–520 mm.), with conspicuous ear-tufts, external ear-opening relatively small, simple, and nonoperculate, cere not inflated laterally, toes feathered, and bill and feet relatively stout.

Bill very stout; top of cere much shorter than chord of culmen, gradually but slightly ascending basally, not distinctly if at all arched. Nostril moderately large, circular or broadly oval, opening in upper-anterior edge of cere, enclosing within its upper-posterior margin an oblique cartilaginous shelf. External ear-openings relatively small, oval, without dermal flap or operculum, symmetrical, but

the right one slightly larger than the left. Wing large, with longest primaries decidedly longer than secondaries; eighth, seventh and eighth, or eighth and ninth <sup>a</sup> primaries longest, the tenth (apparent outermost) longer than fifth,<sup>b</sup> usually equal to or longer than sixth;<sup>c</sup> two to four outer primaries with inner webs emarginated or sinuated. Tail about half as long as wing, slightly rounded, the longest under tail-coverts falling far short of its tip. Tarsus stout, shorter than middle toe with claw, densely covered, all round, with rather long, soft feathers, the toes (except underneath and on terminal phalanges) also densely feathered. Head with conspicuous ear-tufts.

*Coloration* (of American species).—Under parts barred (but not striped) with black or dusky and whitish, usually with a white jugular area; upper parts mottled and vermiculated with grayish brown, dusky, and buffy or tawny or whitish.

*Range*.—Northern hemisphere in general, south to India, southern Africa, and southern extremity of South America; wanting in West Indies and Galapagos Islands. (About ten species,<sup>d</sup> with many subspecies, but only one or two species occurring in America.)

The treatment here given to *Bubo virginianus* with reference to its geographic variations is the same as that of Mr. Oberholser in his revision of the group,<sup>e</sup> the present writer having examined the same material. The present case is an extreme example of the difficulty which sometimes attends any attempt to elucidate the variations of an exceedingly variable species of extensive geographic range, and probably very few authors would agree in their treatment of the case. The subdivision of *B. virginianus* into a considerable number of geographic subspecies seems necessary if any subdivision is to be made at all, for a middle ground between this extreme subdivision and the ignoring of subspecies altogether seems impracticable; at least such a course would leave a vastly greater number of specimens undeter-

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<sup>a</sup> Third, third and fourth, or fourth and fifth from outside, not counting the rudimentary (concealed) eleventh (first) primary.

<sup>b</sup> Sixth from outside.

<sup>c</sup> Fifth from outside.

<sup>d</sup> Owing to absence of specimens for examination I am not able to state precisely the number of known species which should be referred to this genus. In his "Hand List of the Genera and Species of Birds" (i, 1899, 282, 283) Dr. R. Bowdler Sharpe names twenty-five species (and three additional fossil species), but of these at least six are merely geographic forms or subspecies, while two others, *B. blakistoni* Seebohm and *B. doerriesi* Seebohm, are certainly not members of the genus but belong to an exceedingly distinct one which may or may not have been already characterized and named.

<sup>e</sup> A Revision of the American Great Horned Owls. By Harry C. Oberholser, Assistant Ornithologist, U. S. Department of Agriculture. Proc. U. S. Nat. Mus., xxvii, no. 1352, Jan. 22, 1904, pp. 177-192.

minate, and it is more for convenient identification of specimens than for any other reason that extreme subdivision has been made. The only case which affords an exact parallel to the present one, so far as groups treated in the present and prior volumes of this work are concerned, is that of *Chordeiles virginianus*, the geographic variations of which are treated in a similar manner.

The measurements are those published by Mr. Oberholser, it having been deemed inexpedient and quite unnecessary to duplicate the labor involved in making them.

KEY TO THE SUBSPECIES OF *BUBO VIRGINIANUS*.<sup>a</sup>

- a. Wing averaging not less than 350 mm. (usually much more) in females, not less than 335 mm. in males.
- b. Wing averaging less than 365 mm. in females, less than 345 mm. in males.
- c. Upper parts darker, dusky or dark grayish brown predominating.
  - d. Wing averaging more than 360 mm.; with much rufous or tawny in plumage. (Eastern United States and southern Canada, west to eastern border of Great Plains.).....*Bubo virginianus virginianus* (p. 739).
  - dd. Wing averaging less than 360 mm.; with little if any rufous or tawny in plumage.
    - e. More blackish above; feet slightly mottled. (Western Ecuador.)  
*Bubo virginianus nigrescens* (extralimital).<sup>b</sup>
    - ee. Less blackish above; feet conspicuously mottled. (Coast district of California, from about 35° N. lat., to San Francisco Bay.)  
*Bubo virginianus icelus* (p. 746).
  - cc. Upper parts lighter, grayish brown and buffy predominating.
    - d. Face and under parts darker, the feet more spotted. (California, except coast district north of 35° and Colorado Desert area; and northwestern Lower California, north to central-southern Oregon, east to San Francisco Mts., Arizona.).....*Bubo virginianus pacificus* (p. 745).
    - dd. Face and under parts paler, the feet less spotted, often immaculate. (Central Texas to southeastern California; northern Mexico.)  
*Bubo virginianus pallescens* (p. 742).
- bb. Wing averaging more than 371 mm. in females, more than 348 mm. in males.
- c. Light colored.
  - d. Darker (white not predominating); feet more or less mottled or spotted.
  - e. Lighter above, the under parts less heavily barred. (Central North America, from Minnesota, Kansas, etc., to Nevada, southeastern Oregon, etc., north to southern Assiniboia and Manitoba, south to Nevada, Utah, northern New Mexico, and Kansas.)  
*Bubo virginianus occidentalis* (p. 743).

<sup>a</sup> Based chiefly on adult females. Unfortunately, the characters distinguishing the several forms being purely comparative and the measurements often overlapping on account of sexual difference in size (the females of any form being always larger than the males), an entirely satisfactory "key" is probably impracticable. Indeed, the difficulty is increased by the circumstance that many of the forms are more or less dichromatic or even polychromatic, that is to say, have two or more different individual phases of coloration, and thus there is an "overlapping," to a greater or less extent, in color as well as in dimensions.

<sup>b</sup> *Bubo nigrescens* Berlepsch, Proc. Zool. Soc. Lond., 1884, 309 (Ceche, 10,000 ft., w. Ecuador; coll. Warsaw Mus.).—*Asio magellanicus nigrescens* Oberholser, Proc. U. S. Nat. Mus., xxvii, no. 1352, Jan. 22, 1904, 179 (monogr.).



- ee. Darker above, the under parts more heavily barred. (Western Alaska north of Alaska Peninsula.) ..... *Bubo virginianus algistus* (p. 750).
- dd. Paler (white predominating); feet immaculate. (Northern and central Canada, from Hudson Bay to valley of Mackenzie River, breeding southward to Saskatchewan, northern Manitoba, and northeastern Alberta; in winter south to Ontario, Wisconsin, Idaho, etc.).  
*Bubo virginianus wapacuthu* (p. 751).
- cc. Dark colored.
- d. Face and upper parts lighter, more rufescent or tawny. (Idaho, north-eastern Oregon, eastern Washington, and northward to Cook Inlet and upper Yukon Valley, Alaska.) ..... *Bubo virginianus lagophonus* (p. 747).
- dd. Face and upper parts darker, less rufescent or tawny.
- e. Under parts darker; feet more heavily spotted or mottled. (Pacific coast district from northern California to southern Alaska.)  
*Bubo virginianus saturatus* (p. 748).
- ee. Under parts lighter; feet less heavily spotted. (Coast district of Labrador and Ungava.) ..... *Bubo virginianus heterocnemis* (p. 750).
- aa. Wing averaging less than 350 mm. in females, less than 321 mm. in males.
- b. Wing averaging not less than 340 mm. in females, not more than 320 mm. in males.
- c. Plumage with much rufous or tawny. (Costa Rica; Panama?)  
*Bubo virginianus mesembrinus* (p. 754).
- cc. Plumage with little if any rufous or tawny.
- d. More heavily barred below; bill larger. (Central Mexico to Guatemala.)  
*Bubo virginianus melancerus* (p. 753).
- dd. More narrowly and densely barred below; bill smaller. (Southern South America, north to Peru and southern Brazil.)  
*Bubo virginianus magellanicus* (extralimital).<sup>a</sup>
- bb. Wing averaging less than 340 mm. in females, less than 316 in males.
- c. Culmen (without cere) 29 mm.; wing 315 (in female); with less tawny or ochraceous. (Yucatan; British Honduras.)  
*Bubo virginianus mayensis* (p. 753).
- cc. Culmen (without cere) 27.5 mm., wing 330 in female; with more tawny or ochraceous. (Southern Lower California.)  
*Bubo virginianus elachistus* (p. 746).

**BUBO VIRGINIANUS VIRGINIANUS (Gmelin).****GREAT HORNED OWL.**

*Adults (sexes alike).*—Plumage in general tawny or ochraceous basally, this partially exposed on pileum and hindneck, on scapulars, rump, and sides of breast, sometimes on other portions of the under parts; general color of upper parts dark sooty brown or dusky, much broken by coarse transverse mottling of grayish white, the dusky greatly predominating on pileum and hindneck, where forming broad ragged or coarsely and irregularly serrated longitudinal stripes which become blended on forehead; outermost scapulars and some of the middle and greater wing-coverts with inconspicuous irregular spots

<sup>a</sup> *Bubo magellanicus* Daudin, Tr. Orn., ii, 1800, 210 (based on Buffon, Pl. Enl., 385; Straits Magellan).—*Strix nacurutu* Vieillot, Nouv. Dict. d'Hist. Nat., vii, 1817, p. 44 (based on *Hibou des terres magellaniques* Buffon, Pl. Enl. no. 383 [error! 385]).

or blotches of whitish; secondaries more minutely mottled (producing a more grayish effect), and crossed by about five to eight bands of mottled dusky; primary coverts darker, crossed by three or four bands of blackish; primaries with ground color more ochraceous or buffy, finely mottled or vermiculated, and crossed by six to nine transverse series of quadrate spots of dusky; ground color of tail light tawny or ochraceous, transversely mottled with dusky, more whitish terminally, and crossed by six or seven bands of mottled dusky, these about equal in width to the paler interspaces and bands broken or sometimes even quite obliterated on middle rectrices, where the darker markings have an oblique or, sometimes, even longitudinal tendency; ear-tufts with outer webs black, their inner webs mostly ochraceous; "eyebrows" (superciliary region) dull whitish, the feathers with blackish shafts; face dingy ochraceous or dull tawny, passing into dull whitish around eyes; a crescentic mark of black bordering upper eyelid and confluent with black of ear-tufts; facial circle black, except across throat; a conspicuous, crescentic area of immaculate white across foreneck, the feathers white to extreme base; rest of under parts with white predominating, but tawny or ochraceous prevalent on sides of breast and showing as the base color wherever the feathers are disarranged; sides of chest, breast, and abdomen, sides, and flanks, with numerous sharply defined transverse bars of brownish black, these narrower and less sharply defined anteriorly, the center of upper breast immaculate white; a series of large spots or blotches of black on chest, below the white collar; under tail-coverts with bars farther apart than on other under parts; legs and toes dull tawny to pale buff, usually immaculate, or nearly so, more rarely flecked or spotted with dusky; bill dull slate-black or blackish slate; iris bright lemon-chrome yellow; bare portion of toes light brownish gray or ashy (in life); claws horn color, passing into black terminally.

*Young*.—Remiges and rectrices as in adults; downy plumage of head, neck, and body ochraceous or buff, relieved by detached, rather distant, bars of black.

*Adult male*.—Wing, 320–355 (343.3); tail, 190–210 (199.4); culmen, (from cere), 26–30 (28.6).<sup>a</sup>

*Adult female*.—Wing, 352–380 (366.3) tail; 200–225 (218); culmen (from cere), 29–32.5 (30.6).<sup>b</sup>

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<sup>a</sup> Seven specimens.

<sup>b</sup> Six specimens.

The description given above applies to specimens of *average* coloration which, perhaps, constitute a majority. As Mr. Oberholser remarks (Proc. U. S. Nat. Mus., xxvii, 1904, 189), there are, however, two other phases of *B. v. virginianus*—one in which the coloration is light, and the place of the rufous or tawny hues is taken by ochraceous; the other in which grayish and blackish colors predominate, all three phases being connected by intermediates. The last seems to be most prevalent in the New England States, and possibly indicates vergence toward *B. v. heterocnemis*.

Eastern United States and southern Canada; north to Nova Scotia, New Brunswick, Quebec, and Ontario, west to Wisconsin, southeastern Minnesota, Iowa, southeastern South Dakota, eastern Nebraska, eastern Kansas, Indian Territory, and eastern Texas, south to the Gulf coast, including Florida. Accidental in Ireland.<sup>a</sup>

[*Strix*] *virginiana* GMELIN, Syst. Nat., i, pt. i, 1788, 287 (Virginia; based on *Le Grand Duc de Virginie* Brisson, Orn., i, 484; *Virginian Horned Owl* Edwards, Nat. Hist., Birds, ii, pl. 60; *Virginian Eagle Owl* Latham, Syn., i, pt. 1, 119).—LATHAM, Index Orn., i, 1790, 52.

*Strix virginiana* DAUDIN, Traité d'Orn., ii, 1800, 210, pl. 13.—SHAW, Gen. Zool., vii, pt. i, 1809, 215, pl. 30.—WILSON, Am. Orn., vi, 1812, 52, pl. 50, fig. 1.—VIEILLLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 46.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 37; 1828, 435 (crit.); Synopsis, 1828, 37; Isis, 1832, 1139.—AUDUBON, Orn. Biog., i, 1831, 313, pl. 61; v, 1839, 393.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 124; 2d ed., 1840, 129.—PEABODY, Rep. Orn. Mass., 1839, 87.—THOMPSON, Nat. Hist. Vermont, 1853, 65.

*S[trix] virginiana* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 355; Obs. Wilson's Am. Orn., 1826, [16].

*Strix (Bubo) virginiana* SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 82.

*Bubo virginianus* BONAPARTE, Geog. and Comp. List, 1838, 6.—AUDUBON, Synopsis, 1839, 29; Birds Am., oct. ed., i, 1840, 143, pl. 39.—GIRAUD, Birds Long Is., 1844, 27.—DE KAY, Zool. N. Y., ii, 1844, 24, pl. 10, fig. 22.—KAUP, Jardine's Contr. Orn., 1852, 116 (monogr.); Trans. Zool. Soc. Lond., iv, 1859, 241 (monogr.).—STRICKLAND, Orn. Syn., i, 1855, 213 (excl. syn. part).—BREWER, N. Am. Oology, i, 1857, 64.—CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part.—BAIRD, Cat. N. Am. Birds, 1859, no. 48, part.—SCHLEGEL, Mus. Pays-Bas, ii, no. 11 (Oti), 1863, 10; no. 36 (Revue), 1873, 4.—COOPER, Orn. Calif., 1870, 418, part (in synonymy).—ALLEN, Bull. Mus. Comp. Zool., ii, 1871, 337 (e. Florida; excl. syn. part).—COUES, Check List, 1873, no. 317; 2d ed., 1882, no. 462.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 19, part (Delaware).—SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., v, 1879, 417 (Lomita Ranch, Texas; crit.).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 405; Orn. Illinois, i, 1889, 418.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375.—SCOTT, Auk, ix, 1892, 212 (Caloosahatchie R., Florida, breeding).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 376, pl. 12, fig. 12 (egg).—FLEMING, Auk, xxiv, 1907, 74 (Toronto, Ontario, winter resident).

*B[ubo] virginianus* MAXIMILIAN, Journ. für Orn., 1858, 23 (upper Missouri River).—COUES, Key N. Am. Birds, 2d ed., 1884, 503.—RIDGWAY, Man. N. Am. Birds, 1887, 263.

[*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.—SHARPE, Hand-list, i, 1899, 282.

[*Bubo*] *virginiana* BONAPARTE, Consp. Av., i, 1850, 48.

*Bubo virginiana* LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity of New York City).

*Bubo virginianus*, var. *virginianus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 62, part.

[*Bubo virginianus*] var. *virginianus* RIDGWAY, Ann. Lyc. N. Y., x, 1874, 379 (Illinois).

[*Bubo virginianus*] a. *virginianus* COUES, Birds Northwest, 1874, 300, excl. syn. part.

<sup>a</sup> Belle Lake, County Waterford, Jan. 27, 1851; see Zoologist, 1881, 308.



- Bubo virginianus virginianus* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 309.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 175.—HONEWILL, Auk, xxviii, 1911, 233 (Crooked Lake, Minnesota).—SHERMAN, Auk, xxix, 1912, 240 (diurnal activities).
- Otus virginianus* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 57.
- Uhlula virginiana* JAMESON, ed. Wilson's Orn., i, 1831, 100.
- [*Asio*] *virginiana* SWAINSON, Classif. Birds, ii, 1837, 217.
- Asio virginianus* STONE, Auk, xx, July, 1903, 275.
- Asio magellanicus virginianus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, no. 1352, Jan. 22, 1904, 188 (monogr.).
- Bubo ludovicianus* DAUDIN, Traité d'Orn., ii, 1800, 210 (Grand duc de la Louisiane).
- Bubo pinicola* VIEILLOT, Ois. Am. Sept., i, 1807, 51, pl. 19 (no exact locality given, but cites *Le Grand Duc de Virginie* Brisson; *Strix virginiana* Gmelin; *Virginian Eared Owl* Latham; type coll. Dufresne).
- (?) *Strix crassirostris* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 44 (no locality mentioned; coll. Mus. Paris).
- O[tus] crassirostris* GRAY, Gen. Birds, i, 1844, 40.
- Asio crassirostris* STRICKLAND, Orn. Syn., i, 1855, 208.
- Strix macrorhyncha* TEMMINCK, Pl. Col., ii, livr. 77, June, 1821, pl. 62 and text (North America).
- Otus macrorhynchus* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 59.—CUVIER, Règne Anim., ed. 2, i, 1829, 341.—LESSON, Traité d'Orn., 1831, 109.
- Asio macrorhyncha* LESSON, Man. d'Orn., i, 1828, 117.
- Bubo virginianus atlanticus* CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 178; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49.

### BUBO VIRGINIANUS PALLESCENS Stone.

#### PALLID HORNED OWL.

Similar to *B. v. occidentalis*, but smaller; colors averaging lighter.

*Adult male*.—Wing, 330–360 (341); tail, 195–225 (215.9); culmen (from cere), 24–29.5 (27.3).<sup>a</sup>

*Adult female*.—Wing, 355–375 (362.8); tail, 200–235 (222); culmen (from cere), 26–31 (29).<sup>a</sup>

Southwestern United States, from central Texas to Arizona, southeastern California (Colorado Desert), and northwestern Lower California, south into northern Mexico, in States of Sonora (Hermosilla), Chihuahua (San Diego), Nuevo León (Rodriguez), Coahuila (Sabinas), and Durango (Ciudad Durango).

*Bubo magellanicus* (not *Bubo magellanicus* Daudin) KENNERLY, Rep. Pacific R. R. Surv., iv, pt. vi, 1856, 11 ("Camp 98," Arizona), 12 (Bill Williams R., Arizona).

*Bubo virginianus* (not *Strix virginiana* Gmelin) KENNERLY, Rep. Pacific R. R. Surv., x, no. 3, 1859, 20 (Little Colorado R. and "Camp 98," Arizona).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 177, part; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part (Colorado R., California; Little Colorado R., etc., Arizona; New Mexico; Devils R., Texas; Monterey, Nuevo Leon).—BAIRD, Cat. N. Am. Birds, 1859, no. 48, part.—DRESSER, Ibis, 1865, 330 (s. Texas).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 49 (Ft. Whipple, Arizona;

<sup>a</sup> Nine specimens.

resident).—COOPER, Orn. Calif., 1870, 418, part.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 12, part (Hermosilla, Sonora; San Diego, Chihuahua; Ciudad Durango, Durango.)

[*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 116, part.—COUES, Key N. Am. Birds, 1872, 202, part.

[*Bubo virginianus*.] Var. *arcticus* COUES, Key N. Am. Birds, 1872, 202, in text, part.

*Bubo virginianus* . . . var. *arcticus* COUES, Check List, 1873, no. 317a, part.

[*Bubo virginianus*] c. *arcticus* COUES, Birds Northwest, 1874, 301, part (in synonymy).

*Bubo virginianus*, var. *arcticus* (not *Bubo arcticus* Swainson) RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 60, 64, part.

*Bubo virginianus arcticus* COUES, Check List, 2d ed., 1882, no. 463, part.—(?) BIRTWELL, Auk, xviii, 1901, 113 (Bernalillo, New Mexico, Nov. 18, 1900).

*B[ubo] v[irginianus] arcticus* COUES, Key N. Am. Birds, 2d ed., 1884, 504, part.

*Bubo virginianus subarcticus* (not *Bubo subarcticus* Hoy) RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 405a, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375a, part.—SCOTT, Auk, iii, 1886, 424 (Pinal Co., Arizona, resident).—LLOYD, Auk, iv, 1887, 190 (Tom Green and Concho counties, w. Texas, resident).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 34 (San Diego, n. Chihuahua, Feb.).—(?) ANTHONY, Zöe, iv, 1893, 235 (San Pedro Martir Mts. and wooded coast valleys, n. Lower California).

*B[ubo] virginianus subarcticus* RIDGWAY, Man. N. Am. Birds, 1887, 263, part.

*Bubo virginianus pallescens* STONE, Am. Nat., xxxi, no. 363, March 1, 1897, 237 (Watson Ranch, 18 miles s. w. of San Antonio, Texas; coll. U. S. Nat. Mus.); Proc. Ac. Nat. Sci. Phila., 1905, 681 (Hardy R., Colorado delta, Lower California).—ALLEN, Auk, xvi, 1899, 341 (reprint of orig. descr.).—CARROLL, Auk, xvii, 1900, 342 (Refugio Co., Texas, resident).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xviii, 1901, 300, part; Check List, 3rd ed., 1910, 175, part.—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 9 (Huachuca Mts., Arizona).—HUNN, Auk, xxiii, 1906, 421 (Silver City, New Mexico, resident).—LACEY, Auk, xxviii, 1911, 208 (Kerrville, Texas, resident).

[*Bubo*] *pallescens* SHARPE, Hand-list, i, 1899, 282, part.

*Asio v[irginianus] pallescens* STONE, Auk, xx, July, 1903, 275, part.

*Asio magellanicus pallescens* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 182 (monogr.).

## BUBO VIRGINIANUS OCCIDENTALIS Stone.

### WESTERN HORNED OWL.

Much paler than *B. v. virginianus*, with grayish and buffy predominating on upper parts, the under parts more extensively white, with black bars narrower; legs and toes buffy to nearly white, usually immaculate or nearly so; size larger.

*Adult male*.—Wing, 333–365 (349.6); tail, 200–225 (212.8); culmen (from cere), 26–28 (27.1).<sup>a</sup>

*Adult female*.—Wing, 360–390 (376.1); tail, 220–240 (230.5); culmen (from cere), 28–33 (30.2).<sup>b</sup>

<sup>a</sup> Ten specimens.

<sup>b</sup> Nine specimens.

Central United States, from Minnesota, South Dakota, Nebraska, and Kansas to Nevada, southeastern Oregon, Wyoming, and Montana, north to central Alberta; northwestern Iowa in winter.

- Bubo virginiana* (not *Strix virginiana* Gmelin) CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 177, part; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part (Ft. Union; Medicine Bow Creek, Wyoming).—BAIRD, Cat. N. Am. Birds, 1859, no. 48, part.—COOPER, Orn. Calif., 1870, 418, part.
- [*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.
- [*Bubo virginianus*.] Var. *arcticus* (not *Bubo arcticus* Swainson) COUES, Key N. Am. Birds, 1872, 202, in text, part.
- Bubo virginianus* . . . var. *arcticus* COUES, Check List, 1873, no. 317a, part.—RIDGWAY, Bull. Essex Inst., v, 1873, 185 (Colorado).
- [*Bubo virginianus*] c. *arcticus* COUES, Birds Northwest, 1874, 301, part (in synonymy).
- Bubo virginianus*, var. *arcticus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 60, 64, part.—HENSHAW, Ann. Lyc. N. Y., xi, 1874, 9 (Utah).
- Bubo virginianus arcticus* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 13 (Carson, Nevada).—COUES, Check List, 2d ed., 1882, no. 463, part.
- B[ubo] v[irginianus] *arcticus* COUES, Key N. Am. Birds, 2d ed., 1884, 504, part.
- Bubo virginianus*,  $\beta$ . *subarcticus* (not *Bubo subarcticus* Hoy) RIDGWAY, Field and Forest, ii, June, 1877, 209 (Colorado).
- [*Bubo virginianus*]  $\beta$ . *subarcticus* RIDGWAY, Orn. Fortieth Parallel, 1877, 572 (Carson, Nevada, breeding; City of Rocks, s. Idaho).
- Bubo virginianus subarcticus* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 405a, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375a, part.—BECKHAM, Auk, ii, 1885, 143 (Pueblo, Colorado).—GOSS, Auk, iii, 1886, 114 (Rawlins Co., Kansas, Oct. 29, 1885).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 383, part.—COOKE, Birds Col., 1897, 79 (resident).
- B[ubo] *virginianus subarcticus* RIDGWAY, Man. N. Am. Birds, 1887, 263, part.
- Bubo virginianus occidentalis* STONE, Auk, xiii, April, 1896, 155 (Mitchell Co., Iowa, winter spec.; coll. Ac. Nat. Sci. Phila.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 132 (crit.; not admitted to Check List).
- B[ubo] *virginianus occidentalis* STONE, Auk, xiii, 1896, 156 (diagnosis).
- Asio magellanicus occidentalis* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 191 (monogr.).
- Bubo virginianus pallescens* (not of Stone) COOKE, Bull. 44, Col. Agric. Exp. Sta., 1898, 161 (Colorado).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xviii, 1901, 300, part; Check List, 3rd ed., 1910, 175, part.—LARSEN, Wilson Bull., no. 60, 1907, 114 (Lyman Co., South Dakota).—CAMERON, Auk, xxiv, 1907, 268 (Custer Co., Montana, resident; habits).—ROCKWELL, Condor, x, 1908, 14–17 (Colorado; nesting habits, etc.).—VISHER, Auk, xxvi, 1909, 148 (Behrens, w. South Dakota); xxviii, 1911, 11 (Harding Co., South Dakota, resident).—STANSILL, Auk, xxvi, 1909, 394 (centr. Alberta).—WARREN (E. R.), Auk, xxvii, 1910, 146 (Chaffee Co., Colorado); Condor, xiii, 1911, 153, fig. 42 (Delta Co., Colorado; habits, etc.).—BROOKS and COBB, Auk, xxviii, 1911, 468 (near Birch Lake, s. Alberta, Oct., Nov.).—SAUNDERS, Condor, xiv, 1912, 26 (Powell Co., Montana).
- [*Bubo*] *pallescens* SHARPE, Hand-list, i, 1899, 282, part.
- Asio v[irginianus] pallescens* STONE, Auk, xx, July, 1903, 275, part.



## BUBO VIRGINIANUS PACIFICUS Cassin.

## CALIFORNIA HORNED OWL.

Similar to *B. v. pallescens* but darker throughout, the feet more heavily mottled with dusky, the face usually with more decided tinge or suffusion of tawny; slightly smaller.

*Adult male*.—Wing, 313–353 (336.5); tail, 190–218 (204.5); culmen (from cere), 25–27 (26).<sup>a</sup>

*Adult female*.—Wing, 350–370 (360.7); tail, 213–228 (219.3); culmen (from cere), 27–28 (27.5).<sup>b</sup>

California, except southeastern part (Colorado Desert district) and coast district north of 35°; north to south-central Oregon (Ft. Klamath), east to San Francisco Mountain, western Arizona; northern Lower California (except eastern side)?

*Bubo virginianus* (not *Strix virginiana* Gmelin) GAMBEL, Proc. Ac. Nat. Sci. Phila., iii, 1846, 46 (California).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 177, part; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part (Sacramento, San Diego, and Ft. Reading, California).—BAIRD, Cat. N. Am. Birds, 1859, no. 48, part.—HEERMANN, Rep. Pacific R. R. Surv., iv, no. 2, 1859, 35 (Ft. Tejon, and near Sacramento, California).—COOPER, Orn. Calif., 1870, 418, part.

[*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.

*Bubo magellanicus* (not *Bubo magellanicus* Daudin) HEERMANN, Journ. Ac. Nat. Sci. Phila., ii, 1852, 261 (Sacramento Valley).

*Bubo virginianus subarcticus* (not *Bubo subarcticus* Hoy) MEARNs, Bull. Nutt. Orn. Club, iv, 1879, 195 (Ft. Klamath, Oregon).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 405a, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375a, part.—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 204 (Red Bluff, California).—(?)BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, ii, 1889, 284 (San Pedro Martir Mts., 2,500–10,000 ft.; Magdalena I., Comandu, Ubi, and Calmalli, Lower California).—(?)ANTHONY, Zöe, iv, 1893, 235 (San Pedro Martir Mts. and wooded coast valleys, n. Lower California).

*Bubo virginianus*,  $\delta$ . *subarcticus* [Ridgway and] BELDING, Proc. U. S. Nat. Mus., i, March 22, 1879, 433 (Calaveras Big Trees and Marysville, California).

*Bubo virginianus pacificus* CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 178, part; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part.—STONE, Am. Nat., xxxi, 1897, 236.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 119; xvi, 1899, 110; Check List, 3rd ed., 1910, 175.—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1890, 24 (Los Angeles Co., California); Pacific Coast Avifauna, no. 3, 1902, 35 (range); Univ. Calif. Pub. Zool., v, 1908, 60.

*B[ubo] virginianus pacificus* STONE, Auk, xiii, 1896, 156 (diagnosis).

[*Bubo virginianus*.] var. *pacificus* COOPER, Orn. Calif., 1870, 418, part.

*Bubo pacificus* GURNEY, Cat. Birds of Prey, 1894, 39.

[*Bubo*] *pacificus* SHARPE, Hand-list, i, 1899, 282.

*Bubo magellanicus pacificus* THAYER and BANGS, Condor, ix, 1907, 137 (Rosario, Lower California).

*Asio [virginianus] pacificus* STONE, Auk, xx, July, 1903, 275.

*Asio magellanicus pacificus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 183 (monogr.).

<sup>a</sup> Six specimens.

<sup>b</sup> Four specimens.

## BUBO VIRGINIANUS ELACHISTUS Brewster.

## DWARF HORNED OWL.

Similar in coloration to *B. v. pacificus* but much smaller.

*Adult male*.—Wing, 305–325 (315.6); tail, 175–206 (190.3); culmen (from cere), 21–26 (24.8).<sup>a</sup>

*Adult female*.—Wing, 330; tail, 211; culmen (from cere), 27.5.<sup>b</sup>

Southern Lower California (Sierra de la Laguna; Victoria Mountains; Rosário; La Paz; San José del Rancho; Santa Anita; Caduana).

*Bubo virginianus* (not *Strix virginiana* Gmelin) BAIRD, Proc. Ac. Nat. Sci. Phila., xi, 1859, 302 (Cape San Lucas, Lower California); Cat. N. Am. Birds, 1859, no. 48, part.—COOPER, Orn. Calif., 1870, 418, part (Cape San Lucas).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 19, part.

[*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.

[*Bubo virginianus*] var. *arcticus* (not *Bubo arcticus* Swainson) COUES, Key N. Am. Birds, 1872, 202, part.

*Bubo virginianus*, var. *arcticus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 60, 64, part ("Lower California," i. e. Cape San Lucas).

*Bubo virginianus* . . . var. *arcticus* COUES, Check List, 1873, no. 317a, part.

[*Bubo virginianus*] c. *arcticus* COUES, Birds Northwest, 1874, 301, part (in synonymy).

*Bubo virginianus arcticus* COUES, Check List, 2d ed., 1882, no. 463, part.

*Bubo virginianus subarcticus* (not *Bubo subarcticus* Hoy) RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 405a, part; vi, 1883, 349 (Victoria Mts., s. Lower California, part).—BELDING, Proc. U. S. Nat. Mus., v, 1883, 543 (Cape San Lucas district); vi, 1883, 349 (Victoria Mts.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375a, part.—BRYANT, Proc. Calif. Ac. Sci., ser. 2, ii, 1889, 284, part (Cape district; Victoria Mts.).

*B[ubo] virginianus subarcticus* RIDGWAY, Man. N. Am. Birds, 1887 (and 2d ed., 1896), 263, part.

*Bubo virginianus elachistus* BREWSTER, Bull. Mus. Comp. Zool., xli, no. 1, Sept., 1902, 96 (Sierra de la Laguna, s. Lower California; coll. W. Brewster).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xx, 1903, 341; Check List, 3rd ed., 1910, 175.

*Asio magellanicus elachistus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 184 (monogr.).

*Bubo magellanicus elachistus* THAYER and BANGS, Condor, ix, Sept., 1907, 137 (Rosario, Lower California; crit.).

## BUBO VIRGINIANUS ICELUS (Oberholser).

## COAST HORNED OWL.

Similar to *B. v. pacificus* but much darker, especially the upper parts; similar also to *B. v. saturatus* but decidedly smaller and coloration decidedly lighter.

<sup>a</sup> Five specimens.

<sup>b</sup> One specimen.

*Adult male*.—Wing, 335; tail, 215.<sup>a</sup>

*Adult female*.—Wing, 345–360 (352.5); tail, 203–230 (216.5); culmen (from cere), 27.5–28.5 (28).<sup>b</sup>

Coast of California, from about latitude 35° north to the San Francisco Bay district (San Luis Obispo; Bodega; Redwood City; Nicásio).

*Bubo virginianus* (not *Strix virginiana* Gmelin) VIGORS, Zool. Voy. "Blossom," 1839, 15 (San Francisco).—CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part (Bodega, California).—BAIRD, Cat. N. Am. Birds, 1859, no. 48, part.—COOPER, Orn. Calif., 1870, 418, part.

[*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.

[*Bubo virginianus*.] Var. *pacificus* (not *Bubo virginianus pacificus* Cassin) COOPER, Orn. Calif., 1870, 418, part.—COUES, Key N. Am. Birds, 1872, 202, in text, part.

*Bubo virginianus* . . . var. *pacificus* COUES, Check List, 1873, no. 317 b, part.

[*Bubo virginianus*] b. *pacificus* COUES, Birds Northwest, 1874, 301, part (in synonymy).

*Bubo virginianus*, var. *pacificus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 61, 65, part.

*Bubo virginianus pacificus* COUES, Check List, 2d ed., 1882, no. 464, part.

B[ubo] v[irginianus] *pacificus* COUES, Key N. Am. Birds, 2d ed., 1884, 504, part.

B[ubo] *virginianus saturatus* RIDGWAY, Orn. Fortieth Parallel, 1877, 572, footnote, part; Man. N. Am. Birds, 1887, 263, part.

*Bubo virginianus saturatus* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 405 c, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375 c, part.

*Asio v[irginianus] saturatus* STONE, Auk, xx, July, 1903, 275, part.

*Asio magellanicus icelus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 185 (San Luis Obispo, California; coll. U. S. Nat. Mus.).

## BUBO VIRGINIANUS LAGOPHONUS (Oberholser).

### NORTHWESTERN HORNED OWL.

Similar to *B. v. icelus* but decidedly larger, feet darker, and the ochraceous or tawny parts intensified in color.

*Adult male*.—Wing, 345–370 (355.8); tail, 210–235 (223.5); culmen (from cere), 25–30 (27.4).<sup>c</sup>

*Adult female*.—Wing, 350–400 (375.8); tail, 215–252 (238.5); culmen (from cere), 26–31 (29.2).<sup>d</sup>

Idaho (Sawtooth Lake; Fort Sherman), eastern Washington (Walla Walla; Cascade Mountains, 25 miles southeast of Toledo), and north-eastern Oregon (Douglas County; Des Chutes River; Pengra), and northward through eastern and central British Columbia (Vernon; Ashcroft; Okanogan) to Cook Inlet (Hope; Knik; Sheep Creek; Caribou Camp), and interior of Alaska (Nulato; Fort Yukon; Kowak River); occasional winter visitant in Colorado (Jefferson Co., Oct.).

*Bubo virginianus* (not *Strix virginiana* Gmelin) CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part (Okanogan, e. Oregon).—BAIRD, Cat. N. Am.

<sup>a</sup> One specimen.    <sup>b</sup> Two specimens.    <sup>c</sup> Nine specimens.    <sup>d</sup> Six specimens.



- Birds, 1859, no. 48, part.—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, pt. II, 1869, 272, part (Fort Yukon and Nulato, Alaska).
- [*Bubo virginianus*] GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.
- [*Bubo virginianus*.] Var. *pacificus* (not *Bubo virginianus pacificus* Cassin) COUES, Key N. Am. Birds, 1872, 202, in text, part.
- Bubo virginianus* . . . var. *pacificus* COUES, Check List, 1873, no. 317 b, part.
- [*Bubo virginianus*] b. *pacificus* COUES, Birds Northwest, 1874, 301, part (in synonymy).
- Bubo virginianus*, var. *pacificus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 61, 65, part.
- Bubo virginianus pacificus* COUES, Check List, 2d ed., 1882, no. 464, part.
- B[ubo] v[irginianus] *pacificus* COUES, Key N. Am. Birds, 2d ed., 1884, 504, part.
- B[ubo] *virginianus saturatus* RIDGWAY, Orn. Fortieth Parallel, 1877, 572, footnote; part; Man. N. Am. Birds, 1887, 263, part.
- Bubo virginianus saturatus* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part, Nom. N. Am. Birds, 1881, no. 405 c, part.—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 229 (Walla Walla, Washington; crit.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375 c, part.—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 387, part.—STONE, Proc. Ac. Nat. Sci. Phila., 1897, 236, part.—MERRILL (J. C.), Auk, xiv, 1897, 357 (Ft. Sherman, n. w. Idaho).—CHAPMAN, Bull. Am. Mus. N. H., xx, 1904, 402 (Sheep Creek and Caribou Camp, Kenai Peninsula, Alaska).—KERMODE, Provincial Mus. Victoria, 1907, 47, part (Okanogan, Brit. Columbia).—OSGOOD, North Am. Fauna, no. 30, 1909, 89 (Plateau Mt., etc., Yukon Terr.).
- Bubo saturatus* GURNEY, Cat. Birds of Prey, 1894, 39, part.
- [*Bubo*] *saturatus* SHARPE, Hand-list, i, 1899, 282, part.
- Asio v[irginianus] saturatus* STONE, Auk, xx, July, 1903, 275, part.
- Bubo virginianus subarcticus* (not *Bubo subarcticus* Hoy) TURNER, Contr. Nat. Hist. Alaska, 1886, 162, part (Nulato, etc., upper Yukon R.).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 152, part (Fort Yukon, etc.; habits).—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 136 (Ashcroft, Brit. Columbia).
- Asio magellanicus lagophonus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 185 (Fort Walla Walla, Washington; coll. U. S. Nat. Mus.).
- Bubo virginianus lagophonus* SNODGRASS, Auk, xxi, 1904, 228 (Douglas Co., Washington).—GRINNELL (J.), Condor, xi, 1909, 205 (Forty-mile, Yukon Terr.; crit.); Condor, xii, 1910, 42 (Kenai, Alaska, Aug.); Univ. Calif. Pub. Zool., v, 1910, 387 (Hawkins I., Prince William Sound, Alaska).—SMITH (H. G.), Condor, xii, 1910, 133 (Jefferson Co., Colorado, Oct., 1909).

### BUBO VIRGINIANUS SATURATUS Ridgway.

#### DUSKY HORNED OWL

Similar to *B. v. lagophonus* but darker, especially the upper parts, the face and plumage in general with less pronounced tawny or ochraceous admixture, and feet much darker and more heavily mottled.

*Adult male*.—Wing, 345–358 (348.3); tail, 205–222 (212.3); culmen (from cere), 28.5–29 (28.9).<sup>a</sup>

*Adult female*.—Wing, 360–383 (374.7); tail, 215–242 (227.2); culmen (from cere), 28–31 (30).<sup>b</sup>

<sup>a</sup> Four specimens.

<sup>b</sup> Six specimens.

Pacific coast district, from northern California (Humboldt Bay; Potter Valley, Mendocino County) through western Oregon, western Washington, and British Columbia (Vancouver Island; Kamloops; Lund; Chilliwack; Ashcroft) to southern Alaska (Sitka; Baranof, Admiralty, Chichagof, Kuiu, and Douglas islands).

[*Strix*] *virginiana* (not of Gmelin) TOWNSEND (J. K.), Journ. Ac. Nat. Sci. Phila., viii, 1839, 151.

*Bubo virginianus* CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part (Steilacoom, Washington).—BAIRD, Cat. N. Am. Birds, 1859, no. 48, part.—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 154 (Washington).—LORD, Proc. Roy. Artil. Inst. Woolwich, iv., 1864, 111 (Brit. Columbia).—BROWN, Ibis, 1868, 419 (Vancouver Island).—DALL and BANISTER, Trans. Chicago Ac. Sci., i, 1869, 272, part (Sitka, Alaska).—(?)FINSCH, Abh. Nat. Ver. Bremen, iii, 1872, 26 (Alexandrovsk, Alaska; crit.).

[*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.

(?)*Bubo virginianus pacificus* CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 178, part; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 49, part.

[*Bubo virginianus*.] Var. *pacificus* COUES, Key N. Am. Birds, 1872, 202, in text, part.

[*Bubo virginianus*] b. *pacificus* COUES, Birds Northwest, 1874, 301, part (in synonymy).

*Bubo virginianus* . . . var. *pacificus* COUES, Check List, 1873, no. 317b, part.

*Bubo virginianus*, var. *pacificus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 61, 65, part (Sitka, Alaska; Simiahmoo, Washington).

*Bubo virginianus pacificus* COUES, Check List, 2d ed., 1882, no. 464, part.

B[ubo] v[irginianus] *pacificus* COUES, Key N. Am. Birds, 2d ed., 1884, 504, part.

B[ubo] *virginianus saturatus* RIDGWAY, Orn. Fortieth Parallel, 1877, 572, footnote (no type locality specified, but type from Sitka, Alaska, in coll. U. S. Nat. Mus.); Man. N. Am. Birds, 1887, 263, part.

*Bubo virginianus saturatus* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 405c, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375e, part; 3rd ed., 1910, 175.—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 153 (s. coast Alaska).—TOWNSEND, Proc. U. S. Nat. Mus., x, 1887, 204 (Humboldt Bay, California).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 387, part.—STONE, Proc. Ac. Nat. Sci. Phila., 1897, 236, part.—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 35, part; Univ. Calif. Pub. Zoology, v, no. 2, 1909, 216 (Rodman Bay, Baranof I., Windfall Harbor, Admiralty I., and Hooniah, Chichagof I., s. Alaska).—RATHBUN (S. F.), Auk, xix, 1902, 134 (Seattle, Washington, resident).—BOWLES, Auk, xxiii, 1906, 143 (Tacoma, Washington, fall and winter).—KERMODE, Provincial Mus. Victoria, 1907, 47, part (Vancouver I. and Chilliwack, Brit. Columbia).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 65 (Kuiu I. and Douglas I., s. Alaska); x, 1912, 30 (Bear Creek; Errington).

*Bubo saturatus* GURNEY, Cat. Birds of Prey, 1894, 39.

[*Bubo*] *saturatus* SHARPE, Hand-list, i, 1899, 282, part.

*Asio v[irginianus] saturatus* STONE, Auk, xx, July, 1903, 275, part.

*Asio magellanicus saturatus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 187 (monogr.).

*Bubo virginianus icelus* (not *Asio micelus* Oberholser) FERRY, Condor, x, 1908, 41 (Potter Valley, Mendocino County, California).

## BUBO VIRGINIANUS HETEROCNEMIS (Oberholser).

## LABRADOR HORNED OWL.

Similar to *B. v. saturatus* but bill larger, posterior under parts lighter, feet paler and less heavily mottled, and upper parts usually with less tawny or ochraceous admixture.

*Adult male*.—Wing, 350–365 (357.5); tail, 220–230 (225); culmen (from cere), 30.<sup>a</sup>

*Adult female*.—Wing, 370–390 (380); tail, 225–250 (239); culmen (from cere), 28–32 (30.1).<sup>b</sup>

Coast of Labrador (Rigolet; Okkak; Makkokvik; Hopedale; Turnavik Island; Lance au Loup; Fort Naskopee; Sandwich Bay) and Ungava (Fort Chimo; near Forks); Newfoundland; Ontario (Muskoka; Parry Sound; Toronto) in winter.

*Bubo virginianus* (not *Strix virginiana* Gmelin) COUES, Proc. Ac. Nat. Sci. Phila., 1861, 217 (Rigolet, Labrador).

[*Bubo*] *virginianus* GRAY, Hand-list, i, 1869, 43, no. 442, part.—COUES, Key N. Am. Birds, 1872, 202, part.

[*Bubo virginianus*.] Var. *pacificus* (not *Bubo virginianus pacificus* Cassin) COUES, Key N. Am. Birds, 1872, 202, in text, part.

*Bubo virginianus* . . . var. *pacificus* COUES, Check List, 1873, no. 317b, part.

*Bubo virginianus*, var. *pacificus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 61, 65, part (Fort Naskopee, Labrador).

*Bubo virginianus pacificus* COUES, Check List, 2d ed., 1882, no. 464, part.

*B[ubo] v[irginianus] pacificus* COUES, Key N. Am. Birds, 2d ed., 1884, 504, part.

[*Bubo virginianus*] b. *pacificus* COUES, Birds Northwest, 1874, 301, part (in synonymy).

*B[ubo] virginianus saturatus* RIDGWAY, Orn. Fortieth Parallel, 1877, 572, footnote, part; Man. N. Am. Birds, 1887, 263, part.

*Bubo virginianus saturatus* RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191, part; Nom. N. Am. Birds, 1881, no. 405c, part.—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 243 (Fort Chimo, Ungava, resident).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375c, part.—RAINE, Auk, xiii, 1896, 257 (Sandwich Bay, Labrador, breeding; descr. eggs).—FLEMING, Auk, xviii, 1901, 38 (Parry Sound and Muskoka, n. w. Ontario, in winter); xxiv, 1907, 75 (Toronto, Ontario, in winter).

*Asio v[irginianus] saturatus* STONE, Auk, xx, 1903, 275, part.

*Asio magellanicus heterocnemis* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 187 (Lance au Loup, Labrador; coll. E. A. and O. Bangs).—HANTZSCH, Journ. für Orn., 1908, 377 (n. e. Labrador).

*Bubo virginianus heterocnemis* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 347; Check List, 3rd ed., 1910, 176.—FLEMING, Auk, xxv, 1908, 487, in text (Toronto, Ontario, common in winter of 1907-'08).

## BUBO VIRGINIANUS ALGISTUS (Oberholser).

## SAINT MICHAELS HORNED OWL.

Similar in size to *B. v. lagophonus* but much paler throughout, the under parts less heavily barred, the feet less heavily mottled.

<sup>a</sup> Two specimens.

<sup>b</sup> Seven specimens.



*Adult male*.—Wing, 355–360 (357.5); tail, 225–245 (235); culmen (from cere), 29.<sup>a</sup>

*Adult female*.—Wing, 355–390 (371.5); tail, 225–240 (232); culmen (from cere), 28–31 (29.3).<sup>b</sup>

Coast district of northwestern Alaska, from Bristol Bay to (or beyond) Kotzebue Sound (Alognagik River; Port Huron; St. Michaels; Lower Yukon; Kowak River).

*Bubo virginianus subarcticus* (not *Bubo subarcticus* Hoy) NELSON, Cruise "Corwin" in 1881 (1883), 76 (coast of Bering Sea, Alaska); Rep. Nat. Hist. Coll. Alaska, 1887, 152, part (St. Michaels, etc.).—TURNER, Contr. Nat. Hist. Alaska, 1886, 162, part (St. Michaels, etc.).

*Asio magellanicus algistus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 190 (St. Michaels, Alaska; coll. U. S. Nat. Mus.).

*Bubo virginianus algistus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 347; Check List, 3rd ed., 1910, 176.—GRINNELL (J.), Condor, xii, 1910, 42 (St. Michaels).

### BUBO VIRGINIANUS WAPACUTHU (Gmelin).

#### ARCTIC HORNED OWL.

Similar to *B. v. occidentalis* but paler, the upper parts with much more of white and less of blackish, with the ochraceous admixture paler (light buffy); under parts less heavily barred, the feet paler, usually immaculate buff or buffy white.

*Adult male*.—Wing, 337–368 (352); tail, 215–230 (221.6); culmen (from cere), 27–30 (28.5).<sup>c</sup>

*Adult female*.—Wing, 385–390 (387.5); tail, 235–237 (236); culmen (from cere), 31–31.5 (31.3).<sup>d</sup>

North-central Canada, from Hudson Bay to valley of the Mackenzie River (Fort Resolution; Slave River, 75 miles below Fort Smith); breeding southward to northern Manitoba and southwestern Saskatchewan (Prince Albert; Moose Lake; Pas); south in winter to Ontario (Toronto), Wisconsin (Racine), northeastern Illinois (Kane County; Cook County), Minnesota (Aitken), North Dakota, (Devils Lake), Montana, Idaho (Fort Sherman), and Colorado.

[*Strix*] *wapacuthu* GMELIN,<sup>e</sup> Syst. Nat., i, pt. 1, 1788, 290 (woods about Hudson Bay; based on *Wapacuthu Owl* Pennant, Arctic Zool., i, 231).—LATHAM, Index Orn., i, 1790, 58.

<sup>a</sup> Two specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> Five specimens.

<sup>d</sup> Two specimens.

<sup>e</sup> Notwithstanding the circumstance that the original describer placed this bird in the section "without ears," it is practically certain that the Wapacuthu Owl of Pennant is not *Nyctea nyctea*, as commonly supposed, but is the Arctic Great Horned Owl. Except in the one particular mentioned the description answers perfectly to the latter. Molting specimens of *Bubo* are often destitute of obvious ear-tufts, and this may have been the condition of Pennant's bird; or the ear-tufts may have been plucked before the specimen came into his possession.

- Strix wapacuthu* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 35.
- Nyctea wapacuthu* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 63.
- Asio magellanicus wapacuthu* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 191 (monogr.).
- Strix (Bubo) arctica* (not *Bubo arcticus* Forster, 1817) SWAINSON, Fauna Bor.-Am., ii, 1831, 86 (Carlton House, Saskatchewan).
- Bubo arcticus* SWAINSON, Fauna Bor.-Am., ii, 1831, pl. 30.—SWAINSON and RICHARDSON, Proc. Zool. Soc. Lond., 1831, 132.—BLAKISTON, Ibis, 1861, 320 (Forks of the Saskatchewan).—GURNEY, Cat. Birds of Prey, 1894, 38.
- [*Bubo*] *arcticus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 250 ("Laborador").—SHARPE, Hand-list, i, 1899, 282.
- Bubo virginianus arcticus* CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 50, part; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 50, part.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 191; Nom. N. Am. Birds, 1881, no. 405b.—COUES, Check List, 2d ed., 1882, no. 463, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 375b.—SETON, Auk, iii, 1886, 155 (Duck Mt. and Touchwood Hills, Manitoba, fall); xxv, 1908, 71 (Ft. Resolution and Great Slave Lake, Mackenzie), 453 (Winnipeg, Manitoba, 2 specs., no date).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 545 (Duck Mt. and Touchwood Hills, Manitoba, fall).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 386.—COOKE, Birds Col., 1897, 80 (winter visitant).—STONE, Proc. Ac. Nat. Sci. Phila., 1897, 236.—(?)BIRTWELL, Auk, xviii, 1901, 113 (Bernalillo, New Mexico, Nov. 18, 1900).—BENT, Auk, xxv, 1908, 25 (s. w. Saskatchewan, breeding).—FLEMING, Auk, xxv, 1908, 487 (Toronto, Ontario, numerous in winter of 1907-'08).
- B[ubo] v[irginianus] arcticus* COUES, Key N. Am. Birds, 2d ed., 1884, 504, part.
- B[ubo] virginianus arcticus* STONE, Auk, xiii, 1896, 156 (diagnosis).
- [*Bubo virginianus*.] *Var. arcticus* COUES, Key N. Am. Birds, 1872, 202, in text, part.—NELSON, Bull. Essex Inst., viii, 1876, 117 (Cook Co., n. e. Illinois, Dec., 1874).
- Bubo virginianus* . . . *var. arcticus* COUES, Check List, 1873, no. 317a, part.
- [*Bubo virginianus*] *b. arcticus* RIDGWAY, Ann. Lyc. N. Y., x, Jan., 1874, 379, in text (Pekin, Illinois).
- [*Bubo virginianus*] *c. arcticus* COUES, Birds Northwest, 1874, 301, part (in synonymy).
- Bubo virginianus*, *var. arcticus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 64, part.
- Bubo subarcticus* HOY, Proc. Ac. Nat. Sci. Phila., vi, 1852, 211 (near Racine, Wisconsin; coll. Ac. Nat. Sci. Phila.).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 117.
- B[ubo] virginianus subarcticus* RIDGWAY, Bull. Ills. State Labr. N. H., no. 4, 1881, 187 (Illinois).
- Bubo virginianus subarcticus* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xiv, 1897, 134; xxv, 1908, 372; Check List, 3rd ed., 1910, 175.—MERRILL (J. C.), Auk, xiv, 1897, 353 (Ft. Sherman, Idaho).—RICHMOND, Proc. Biol. Soc. Wash., xv, 1902, 86 (crit. nomencl.; *Bubo arcticus* Swainson preoccupied).—FLEMING, Auk, xxiv, 1907, 75 (Toronto, Ontario, 4 records).—FERRY, Auk, xxvii, 1910, 199 (Prince Albert, Saskatchewan, June).—(?)GRINNELL, Condor, xii, 1910, 42 (Russian Mission, lower Yukon, Dec. 20; Yakutat Bay, Alaska, May 15; crit.).
- Asio v[irginianus] subarcticus* STONE, Auk, xx, July, 1903, 275.

**BUBO VIRGINIANUS MELANCERUS (Oberholser).****OAXACA HORNED OWL.**

Similar in coloration to *B. v. pacificus*, but decidedly smaller, bill larger, upper parts darker, and, usually, with face more fulvescent.

*Adult male*.—Wing, 320; tail, 180; culmen (from cere), 26.<sup>a</sup>

*Adult female*.—Wing, 345–355 (349); tail, 205–210 (207.3); culmen (from cere), 27–29 (28).<sup>b</sup>

Central and southern Mexico, in States of Tamaulipas (Soto la Marina), Vera Cruz, Puebla (Orizaba; Chalhicomula), Mexico (Tlalpám; Valley of Mexico; Mount Popocatepetl), Guanajuato (Guanajuato), Jalisco (Guadalajara; Etzatlán; La Barca; Sierra del Rosário; Ixtlán; Rancho el Zapote; La Venta del Astillero; Volcán de Colima), Michoacán (Querendero; Zamora), and Oaxaca (Tehuantepec) and Guatemala (Dueñas; San Gerónimo); northern Nicaragua (Matagalpa)?

*Bubo virginianus* (not *Strix virginiana* Gmelin) SCLATER, Proc. Zool. Soc. Lond., 1859, 390 (Oaxaca); 1860, 253 (Orizaba, Vera Cruz).—(?) SALVIN and SCLATER, Ibis, 1860, 276 (Guatemala).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 19, part (Guatemala).—LAWRENCE, Bul. U. S. Nat. Mus., no. 4, 1876, 37 (Tehuantepec City, Oaxaca).—SUMICHRIST, La Naturaleza, v, 1882, 237 (Cacoprieto and Tehuantepec City, Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 12, part (localities in Jalisco; Guanajuato; Valley of Mexico; Tamaulipas; Cacoprieto and Tehuantepec City, Oaxaca; Monte Alto, San Rafael, Anganguero, and Orizaba, Vera Cruz; Dueñas and San Gerónimo, Guatemala; Matagalpa, n. Nicaragua?).

*Bubo virginianus*, var. *virginianus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 62, part (Oaxaca; Guatemala).

*Asio magellanicus melancerus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 180 (Tehuantepec City, Oaxaca; coll. U. S. Nat. Mus.).

**BUBO VIRGINIANUS MAYENSIS Nelson.****YUCATAN HORNED OWL.**

Similar to *B. v. melancerus* but decidedly smaller (except bill), general coloration paler, under parts less heavily barred and less suffused or intermixed with tawny, and face less fulvescent as well as less distinctly mottled with dusky.

*Adult female*.—Wing, 315; tail, 198; culmen (from cere), 29.<sup>c</sup>

Yucatan (Chichen Itza; Mérida; Buctzotz) and British Honduras (Manatee District).

*Bubo virginianus* (not *Strix virginiana* Gmelin) LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 207 (Merida, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 12, part (Merida and Buctzotz, Yucatan).

<sup>a</sup> One specimen.

<sup>b</sup> Three specimens.

<sup>c</sup> One specimen (the type). The adult male of this form not examined.



*Bubo virginianus mayensis* NELSON, Proc. Biol. Soc. Wash., xiv, Sept. 25, 1901, 170 (Chichen Itza, Yucatan; coll. U. S. Nat. Mus.).

*Bubo magellanicus mayensis* BANGS, Proc. Biol. Soc. Wash., xxi, 1908, 44 (Manatee District, Brit. Honduras; crit.).

*Asio magellanicus mayensis* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 181 (monogr.).

### BUBO VIRGINIANUS MESEMBRINUS (Oberholser).

#### COSTA RICAN HORNED OWL.

Similar in coloration to more fulvescent examples of *B. v. virginianus* but the tawny color intensified (more rufescent) and more prevalent, and size decidedly less.

*Adult female*.—Wing, 340; tail, 198; culmen (from cere), 29.<sup>a</sup>

Costa Rica (San José); western Panamá (Chitra, Verágua).

*Bubo virginianus* (not *Strix virginiana* Gmelin) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (San Jose, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 366 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 216 (Chitra, Veragua).—ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 125 (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 12, part (San Jose, Costa Rica; Chitra, Veragua).

*Bubo virginianus*, var. *virginianus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 62, part (San Jose, Costa Rica; crit.).

*Asio magellanicus mesembrinus* OBERHOLSER, Proc. U. S. Nat. Mus., xxvii, Jan. 22, 1904, 179 (San Jose, Costa Rica; coll. U. S. Nat. Mus.).

*Bubo virginianus mesembrinus* CARRIKER, Ann. Carnegie Mus., vi, Sept. 7, 1910, 473 (Costa Rica).

### Genus PULSATRIX Kaup.

*Pulsatrix* KAUP, Isis, 1848, 771. (Type, *Strix torquata* Daudin=*S. perspicillata* Latham.)

Large Bubonidæ (wing about 305–360 mm.) without ear-tufts but with the ear-conch relatively small, simple, nonoperculate (the two of opposite sides symmetrical), and with very stout bill and feet, the latter densely feathered at least on basal portion of toes.

Bill relatively large and very strong; top of cere decidedly shorter than chord of culmen, very broad, very slightly convex or nearly straight. Nostril broadly oval and obliquely vertical, or nearly circular, in upper anterior edge of cere. Wing rather long, the longest primaries exceeding distal secondaries by nearly one-third the total length of wing; sixth and seventh, or fifth, sixth, and seventh, <sup>b</sup>primaries longest, the ninth<sup>c</sup> intermediate between second and third, <sup>d</sup>or

<sup>a</sup> One specimen (the type). Adult male not seen.

<sup>b</sup> Fifth and sixth, or fifth, sixth, and seventh, from outside, not counting rudimentary eleventh primary.

<sup>c</sup> Second from outside.

<sup>d</sup> Eighth and ninth from outside.

third and fourth,<sup>a</sup> the tenth (apparent outermost) shorter than first; five outer primaries emarginated or sinuated on inner web. Tail about half as long as wing or a little more, slightly rounded. Feet very strong; tarsus about as long as middle toe without claw, densely feathered, as are also the toes, except terminal phalanges.

*Coloration*.—Mostly uniform dark sooty brown or brownish black, relieved by a white supraloral stripe and gular band, the under parts posterior to chest buff (with or without brown or blackish bars).

*Range*.—Tropical America, except West Indies and Galapagos Islands. (Two species?)<sup>b</sup>

<sup>a</sup> Seventh and eighth from outside.

<sup>b</sup> I have not seen *Noctua melanota* Tschudi, which seems to be related to the type-species of *Pulsatrix* and by some authors is placed in that genus. According to Sharpe (Cat. Birds Brit. Mus., ii, 1875, 247, 280), it has the toes mostly naked.

The latest revision of this group is that by Count von Berlepsch, who recognizes the following forms (Bull. Brit. Orn. Club, xii, 1901, 4-6):

(1) *P. perspicillata* [= *P. p. perspicillata* + *P. p. saturata*], from Mexico to eastern Ecuador and north side of Amazon River.

(2) *P. pulsatrix*, from southern Brazil.

(3) *P. melanonota*, from Peru and Ecuador.

(4) *P. sharpei*, from eastern Brazil.

The principal synonymy of the extralimital forms (which I have no means of verifying, sufficient material being wanting) is as follows:

(2) *Pulsatrix pulsatrix pulsatrix* (Maximilian).

*Strix pulsatrix* Maximilian, Reis. Bras., i, 1820, 366, footnote (Rio Grande do Belmonte, s. Brazil; type now in coll. Am. Mus. N. H.; see Allen, Bull. Am. Mus. N. H., ii, 1889, 265); oct. ed., i, 1820, 362; oct. ed., ii, 1821, 182.—*S[trix] pulsatrix* Maximilian, Beitr. Naturg. Bras., iii, pt. i, 1830, 268 (Rio Mucuri, Rio Belmonte, and Ilha do Chave, Brazil).—*Ulula pulsatrix* Schlegel, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 17, footnote.—*[Syrnium] pulsatrix* Gray, Hand-list, i, 1869, 50, no. 537.—*Syrnium pulsatrix* Berlepsch, Journ. für Orn., 1873, 282 (Santa Catarina, s. Brazil; synonymy; geog. range; crit.).—*Pulsatrix pulsatrix* Berlepsch, Bull. Brit. Orn. Club, xii, no. lxxxi, Oct. 30, 1901, 4, 5 (Santa Catarina, etc.; crit.).

(3) *Pulsatrix pulsatrix melanota* (Tschudi).

*N[octua] melanota* Tschudi, Wiegmann's Archiv für Naturg., x, pt. i, 1844, 266 (Peru).—*Noctua melanonota* Tschudi, Fauna Peruana, Orn., 1845-46, 114, pl. 4.—*[Syrnium] melanonotum* Gray, Hand-list, i, 1869, 50, no. 536.—*[Ciccaba] melanonota* Selater and Salvin, Nom. Av. Neotr., 1873, 117.—*P[pulsatrix] melanonota* Berlepsch, Bull. Brit. Orn. Club, xii, no. lxxxi, Oct. 30, 1901, 6, in text (crit.).—*Pulsatrix melanonota* Berlepsch and Stolzmann, Proc. Zool. Soc. Lond., 1902, 41 (crit.).—(?) *Pulsatrix fasciiventris* Salvadori and Festa, Boll. Mus. Zool., etc., Torino, xv, no. 368, Feb. 19, 1900, 22 (Valle del Zamora, Ecuador; coll. Turin Mus.).

(4) *Pulsatrix pulsatrix sharpei* (Berlepsch).

*Athene melanonota* (not *Noctua melanota* Tschudi) Pelzeln, Orn. Bras., i, 1868, 9.—*Syrnium melanonotum* Sharpe, Cat. Birds Brit. Mus., ii, 1875, 280.—*Ciccaba melanonota* Taczanowski, Orn. du Pérou, i, 1884, 184.—*Pulsatrix sharpei* Berlepsch, Bull. Brit. Orn. Club, xii, no. lxxxi, Oct. 30, 1901, 6 (Province of Espiritu Santo, e. Brazil; coll. Count von Berlepsch).—*Syrnium koenigswaldianum* Bertoni, Aves Nuevas del Paraguay, 1901, 175.

## PULSATRIX PERSPICILLATA PERSPICILLATA (Latham).

## SPECTACLED OWL.

*Adults (sexes alike).*—Pileum, hindneck, back, rump, and upper tail-coverts plain very dark sooty brown; rest of upper parts dark sooty grayish brown, the outer webs of exterior scapulars usually more or less distinctly barred (broadly) with paler, sometimes conspicuously barred with buff; larger wing-coverts (at least the greater coverts) usually indistinctly mottled, marbled, or otherwise marked with paler grayish brown; secondaries crossed by indistinct but very regular and sharply defined, usually more or less mottled, bands of lighter grayish brown; primaries similarly banded, but the bands darker and becoming obsolete on distal portion of longer and outermost quills; tail crossed by narrow bands of lighter grayish brown, these less distinct, sometimes obsolete or even altogether wanting, on middle pair of rectrices; "eyebrow" (superciliary region) and anterior portion of lores dull white, the bristly feathers of the latter with shafts black distally; orbital and auricular regions and posterior portion of lores plain dark sooty brown; malar region white or dull white, sometimes streaked with dusky; chin and upper throat sooty blackish; across lower throat and extending thence laterally, on each side, to behind auricular region, white, more or less tinged or suffused with pale brownish buffy posteriorly and laterally, where usually more or less barred (broadly) with dark sooty brown or dusky; chest uniform dark sooty brown; rest of under parts immaculate light buff to cinnamon-buff; legs and feet immaculate buff; bill pale dull yellowish; iris deep yellow to brownish orange-yellow; terminal portion of toes dull yellowish gray.

*Young.*—Remiges and rectrices (if developed) as in adults; orbital and auricular regions uniform sooty black or very dark sooty brown; chin and upper throat sooty brown; rest of plumage (down) immaculate buffy white, passing into pale buff on under parts of body.

*Adult male.*—Length (skins), 400–435 (407); wing, 305–335 (322.7); tail, 173.5–189 (182.2); culmen, from cere, 26.5–29 (27.3).<sup>a</sup>

*Adult female.*—Length (skins), 435–470 (459); wing, 318–350 (340.3); tail, 183–196 (190.5); culmen, from cere, 26.5–31.5 (29.1).<sup>b</sup>

<sup>a</sup> Three specimens.<sup>b</sup> Seven specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
One adult male from Venezuela.....	305	173.5	26.5
One adult male from northern Colombia.....	335	184	26.5
One adult male from eastern Panama (Canal Zone).....	328	189	29
One adult male from western Panama (Chiriqui) ( <i>P. p. saturata</i> ).....	329	182	30
Nine adult males from Costa Rica ( <i>P. p. saturata</i> ).....	335.2	197.7	28.8
Two adult males from Nicaragua ( <i>P. p. saturata</i> ).....	330	184	28.5



Northern South America, from Amazon River (including Diamantina, on south side of lower Amazon) northward; eastern Panamá (Loma del León, Canal Zone).

[*Strix*] *perspicillata* LATHAM, Index Orn., i, 1790, 58 (Cayenne; based on *Spectacle Owl* Latham, Synopsis Birds, Suppl., p. 50, pl. 107).

*Strix perspicillata* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 32 (Cayenne).

*Ciccaba perspicillata* CASSIN, Cat. Striges Mus. Ac. Nat. Sci. Phila., 1849, 17, part (Surinam).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 28, part (Lion Hill, Panamá; Colombia to Guiana and Brazil).

*Syrnium perspicillatum* STRICKLAND, Orn. Syn., i, 1855, 193.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 289 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 370 (Lion Hill); 1867, 590 (north side Amazon Valley).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 277, part (north side Amazon Valley).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 132 (Santa Marta, Colombia).

*Pulsatrix perspicillata* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 126, part (Brazil).—HELLMAYR, Novit. Zool., xiii, 1906, 45 (Laventille, Trinidad; crit.).

[*Pulsatrix*] *perspicillata* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 252 (Guiana; Surinam; Brazil).—SHARPE, Hand-list, i, 1899, 284, part.

(?)*P[ulsatrix] perspicillata* BERLEPSCH, Bull. Brit. Orn. Club, xii, 1901, 5, in text (e. Ecuador).

*Pulsatrix perspicillatum* BERLEPSCH, Novit. Zool., xv, 1908, 288 (Cayenne).

*Strix personata* DAUDIN, Traité d'Orn., ii, 1800, 192 (Cayenne; based on *Chouette à masque noir* Levaillant, Ois. d'Afr., i, pl. 44).

*Syrnium personatum* GRAY, Gen. Birds, iii, 1849, App., p. 3.

*Strix torquata* DAUDIN, Traité d'Orn., ii, 1800, 193 (Cayenne; based on *Chouette à collier* Levaillant, Ois. d'Afr., i, pl. 42).

*Noctua torquata* STEPHENS, Shaw's Gen. Zool., xiii, pt. 2, 1826, 67.—LESSON, Traité d'Orn., 1831, 105.

*A[thene] torquata* GRAY, Gen. Birds, i, 1844, 35.—CABANIS, in Schomburgk, Reis. Brit. Guiana, iii, 1848, 732.

*Athene torquata* STRICKLAND, Orn. Syn., i, 1855, 172.—LÉOTAUD, Ois. Trinidad, 1866, 52.—PELZELN, Orn. Bras., i Abth. 1868, 8 (Borba, Rio Negro, and Pará, Brazil).

[*Athene*] *torquata* PELZELN, Orn. Bras., iv Abth. 1871, 399 (range in Brazil)

[*Ciccaba*] *torquata* BONAPARTE, Cons. Av., i, 1850, 43 (Guiana).

Footnote—Continued.

Locality.	Wing.	Tail.	Culmen, from cere.
FEMALES.			
One adult female from lower Amazon (Diamantina).....	318	183.5	26.5
Three adult females from northern Colombia.....	342.3	191.3	28.8
One adult female from eastern Panamá (Loma del Leon).....	345	189.5	30.5
Two adult females from eastern Panamá (Cana) ( <i>P. p. saturata</i> ).....	346	193.2	30
One adult female from Chiriqui, western Panamá ( <i>P. p. saturata</i> ).....	347	192	30
Four adult females from Costa Rica ( <i>P. p. saturata</i> ).....	326.2	183	29.6
One adult female from Nicaragua ( <i>P. p. saturata</i> ).....	347	203	31
Two adult females from British Honduras ( <i>P. p. saturata</i> ).....	348	203.2	30.7
One adult female from Salvador ( <i>P. p. saturata</i> ).....	335	191.5	27
One adult female from Oaxaca ( <i>P. p. saturata</i> ).....	360	204	32.5

- Pulsatrix torquata* (?) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1873, 304 (Chamicuros, e. Peru).—ALLEN, Bull. Essex Inst., viii, 1876, 81 (Santarem, lower Amazon).—SALVIN, Ibis, 1886, 71 (Bartica Grove, Brit. Guiana).—RIKER, Auk, viii, 1891, 160 (Santarem, lower Amazon).—GURNEY, Cat. Birds of Prey, 1894, 39.—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 68 (Trinidad).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 16 (Loma del Leon, Panama).  
*[Pulsatrix] torquata* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117, part.  
*[Syrnium] torquatum* KAUP, Isis, 1848, 771, part.—GRAY, Hand-list, i, 1869, 50, no. 535, part.  
*Syrnium torquatum* KAUP, Trans. Zool. Soc. Lond., iv, 1859, 258, part (Guiana).—FINSCH, Proc. Zool. Soc. Lond., 1870, 557 (Trinidad).  
*Bubo torquatus* PYCRAFT, Trans. Linn. Soc. Lond., sec. ser., vii, 1898, 240.  
*Strix superciliosa* SHAW, Gen. Zool., vii, pt. 1, 1809, 250 (based on *La Chouette à collier* Levaillant, pl. 42 and *Strix torquata* Daudin, Traite d'Orn., ii, 193).  
*Strix larvata* SHAW, Nat. Misc., xix, 1808, pl. 801 (Cayenne; new name for *S. personata* Daudin).  
*Athene melanota* (not *Noctua melanota* Tschudi) PUCHERAN, Rev. et Mag. Zool., 1849, 28 (Brazil; coll. Mus. Paris).—STRICKLAND, Orn. Syn., i, 1855, 172.

### PULSATRIX PERSPICILLATA SATURATA Ridgway.<sup>a</sup>

#### SOOTY SPECTACLED OWL.

Similar to *P. p. perspicillata* but darker; the upper parts (except wings and tail) sooty black or very dark sooty brown, the chest very dark sooty brown or sooty blackish (instead of sooty grayish brown), and the under parts posterior to chest deeper buff (sometimes deep cinnamon-buff), frequently more or less barred (sometimes heavily), except on median line, with sooty blackish, the legs also frequently barred (sometimes heavily) with sooty black; bill larger.

*Adult male*.—Length (skins), 390–495 (465); wing, 314–347 (333.4); tail, 177.5–215 (195.2); culmen, from cere, 27–30 (28.7).<sup>b</sup>

*Adult female*.—Length (skins), 400–510 (454); wing, 317–360 (339); tail, 164–204 (192.9); culmen, from cere, 27–32.5 (30).<sup>c</sup>

Southern Mexico, in States of Vera Cruz (Santecomapám; Jalapa; Omealca; Atoyác; Uvero) and Oaxaca (Santa Eligénia; Tehuantepec City; mountains near Santo Domingo), southward through Guatemala (Choctúm; Antigua; Escuintla; Puerto Bárrios), Salvadór (La Libertád), British Honduras (Cayo; Toledo District), Nicaragua (Chontales; Chinandega; Momotombo; Sucuyá; San Emilio; Bluefields), Costa Rica (Angostura; Las Anonas; Escazú; Nicoya; La Palma de Nicoya; Bebedero; Guanacaste; Pigres; Cerro Santa Maria; Bolsón; Laguária and San Joaquín, Dota; El Pozo de Térraba; Pozo del Rio Grande; Rio Sicsola, Talamanca; Guácimo), and western Panamá (Chitra, Castillo, and Calobre, Verágua; Boquete, Bogaba, and Boquerón, Chiriquí) to eastern Panamá on Pacific side (Cana, Darién); western Colombia?

<sup>a</sup> New subspecies. (Type no. 155672, coll. U. S. Nat. Mus. (Biol. Survey collection), adult female, Santo Domingo, Oaxaca, Mexico, June 18, 1895; Nelson and Goldman.)

<sup>b</sup> Eleven specimens.

<sup>c</sup> Ten specimens.

*Syrnium perspicillatum* SCLATER and SALVIN, Ibis, 1859, 222 (Escuintla and Antigua, Guatemala); Proc. Zool. Soc. Lond., 1867, 280 (Bluefields R., Nicaragua).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (Las Anonas, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 366 (Costa Rica).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 277, part (Chitra, Panama; Guatemala; Tehuantepec).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 520 (Rio Escondido, Nicaragua).

*Pulsatrix perspicillatus* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 126, part (Nicaragua; Jalapa, Vera Cruz).—BANGS, Auk, xxiv, 1907, 294 (Pozo del Rio Grande, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 474 (Pigres, San Joaquin de Dota, Cerro Santa Maria, Bolson, Guanacaste, Guacimo, Rio Sicsola, Bebedero, and El Pozo de Terraba, Costa Rica).

*Ciccaba perspicillata* (not *Strix perspicillata* Latham) SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 28 (Atoyac, Santecomapam, Omealca, and Uvero, Vera Cruz; Tehuantepec and Santa Efigenia, Oaxaca; Cayo, Brit. Honduras; Choctum and Escuintla, Guatemala; La Libertad, Salvador; Sucuya, Bluefields, Chinandega, Momotombo, and San Emilio, Nicaragua; Nicoya, La Palma de Nicoya, Bebedero, Las Anonas, and Angostura, Costa Rica; Chitra, Castillo, Calobre, and Bugaba, Panama).

[*Pulsatrix*] *perspicillata* SHARPE, Hand-list, i, 1899, 284, part.

*Pulsatrix perspicillata* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 25 (Bogaba, Panama).

*Ciccaba torquata* (not *Strix torquata* Daudin) SCLATER, Proc. Zool. Soc. Lond., 1857, 227 (Santecomapam, Vera Cruz).—FRANTZIUS, Journ. für Orn., 1869, 366 (Costa Rica).

*Pulsatrix torquata* SALVIN, Proc. Zool. Soc. Lond., 1870, 216 (Chitra, Castillo, and Bugaba, Panama).—(?) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 539 (Cauca, w. Colombia).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 38 (Santa Efigenia, Oaxaca).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 403 (La Palma de Nicoya, Costa Rica); vi, 1883, 388 (Sucuya, Nicaragua).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 125 (Angostura, Costa Rica).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 219 (Puerto Barrios, Guatemala).

[*Pulsatrix*] *torquata* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117, part.

### Genus CICCABA Wagler.

*Ciccaba* WAGLER, Isis, 1832, 1222. (Type, *Strix hihula* Daudin.)

*Macabra* BONAPARTE, Rev. et Mag. de Zool., vi (2), 1854, 541. (Type, as fixed by Gray, *Strix hylophila* Temminck.)

*Nyctimene* <sup>a</sup> HEINE, in Heine and Reichenow, Nom. Mus. Hein. Orn., 1890, 252. (New name for *Macabra* Bonaparte, on grounds of purism.)

Medium-sized Bubonidæ (wing about 210-293 mm.), without ear-tufts, with ear-conch relatively small, nonoperculate, and symmetrical, and toes entirely naked. (Somewhat resembling *Pulsatrix* but of much lighter build, especially the bill and feet, and toes naked.)

Bill relatively rather small; top of cere much shorter than chord of culmen, rather narrow, nearly straight or very faintly convex. Nostril rather large, oval, obliquely vertical, in upper-anterior edge of cere. Wing rather long and pointed, the longest primaries exceeding distal secondaries by about one-third the total length of wing;

<sup>a</sup> Νύξ (νυκτ-), night; μῆνη, the moon. (Richmond).



sixth and seventh, sixth, seventh, and eighth, or fifth, sixth, and seventh <sup>a</sup> primaries longest, the tenth (apparent outermost) a little shorter than second; <sup>b</sup> five outer primaries with inner webs sinuated (the sinuation sometimes very indistinct on fifth). Tail much more than half as long as wing, slightly rounded. Tarsus longer than middle toe with claw, densely clothed with rather short feathers; toes naked, except basal portion of middle one.

*Coloration*.—I. Sooty brown or dusky above, vermiculated with dull buffy or buffy grayish, or transversely spotted with tawny; beneath buffy or tawny, striped or spotted with dusky (sometimes vermiculated anteriorly). II. Plain sooty black above, with white bars on hindneck and tail; beneath white broadly barred with black.

*Range*.—Continental tropical America. (About ten species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF *CICCABA*.

- a. Under parts regularly barred with black and white; upper parts plain sooty black, interrupted by a nuchal collar of barred black and white. (*Ciccaba nigrolineata*.)
- b. Black bars on under parts narrower; upper parts without white bars, except on hindneck, and, sometimes, on wing-coverts and upper tail-coverts. (Southern Mexico to western Ecuador.).....*Ciccaba nigrolineata nigrolineata* (p. 763).
- bb. Black bars on under parts broader; upper parts with white bars on back, scapulars, etc. (Central Colombia.)
- Ciccaba nigrolineata spilonota* (extralimital).<sup>c</sup>
- aa. Under parts buffy white to buffy cinnamon, striped with brownish black or dark brown; upper parts grayish brown to dark sooty brown, more or less mottled, barred, or spotted with paler. (*Ciccaba virgata*.)
- b. Darker, the ground color of under parts more or less strongly buffy to buffy cinnamon, the sides of breast (sometimes whole breast) mottled or barred with dusky and buffy brownish or dull buffy. (Southeastern Mexico to Venezuela and western Colombia.).....*Ciccaba virgata virgata* (p. 763).
- bb. Paler, the ground color of under parts dull white or buffy white, with little if any darker mottling on sides of breast.
- c. Upper parts spotted with white or whitish. (Western Mexico.)
- Ciccaba virgata squamulata* (p. 766).
- cc. Upper parts barred with pale buffy brown or brownish buff. (Northeastern Mexico.).....*Ciccaba virgata tamaulipensis* (p. 767).

#### *CICCABA NIGROLINEATA NIGROLINEATA* Sclater.

##### BLACK-AND-WHITE OWL.

*Adults (sexes alike)*.—Pileum and nape uniform black or sooty black; hindneck broadly barred with black and white, the black bars rather broader than the white ones, both very sharply defined; rest of upper parts dark sooty brown to sooty black,<sup>d</sup> the upper tail-coverts usually

<sup>a</sup> Fourth and fifth, third, fourth, and fifth, or fourth, fifth, and sixth from outside.

<sup>b</sup> Ninth from outside.

<sup>c</sup> [*Syrnium nigrolineatum*.] Subsp. *α*. *Syrnium spilonotum* Sharpe, Cat. Birds Brit. Mus., ii, 1875, 277 (Bogota, Colombia; coll. Brit. Mus.; ex [*Syrnium*] *spilonotum* Gray, Hand-list, i, 1869, 49, =nomen nudum).

<sup>d</sup> The color darker (more nearly black) in fresh plumage, more sooty in older plumage.

with irregular narrow bars of white; outer webs of remiges, except distal half of primaries, with indications of more or less distinct small bars or transverse spots of pale grayish brown, these, in part at least, sometimes whitish; tail black, crossed by four narrow, irregular bands of white and more or less broadly tipped with the same, these white bands sometimes, at least in part, more or less shaded or mottled with light grayish brown; whole face, including chin, black or sooty black, the superciliary region spotted with white; rest of under parts white regularly and very sharply barred with black, the bars gradually becoming wider posteriorly, on flanks, abdomen, and under tail-coverts; legs more heavily and closely barred with black, the extreme lower portion uniform black; bill buff-yellowish or yellowish buff; iris dark brown,<sup>a</sup> dark red,<sup>b</sup> or yellow;<sup>c</sup> toes brownish yellow or light yellowish brown in dried skins, yellow or orange-yellow in life.

*Young*.—"Above silvery white, narrowly barred with dark brown, a few black feathers appearing here and there, more especially on the crown; wing-coverts black, excepting a few of the greater ones, which are buffy white barred with black, the outermost plume of the winglet tipped and barred with white; \* \* \* entire under surface of body white, washed more or less with yellowish, and numerous crossed with blackish, the under wing-coverts very thickly, but the under tail-coverts more narrowly, barred with black."<sup>d</sup>

*Adult male*.—Length (skins), 360–380 (372); wing, 272–285 (277.2); tail, 161–171.5 (164.6); culmen, from cere, 18.5–22 (21).<sup>e</sup>

*Adult female*.—Length (skins), 355–410 (386); wing, 255–293 (274.4); tail, 154–179.5 (164.5); culmen, from cere, 19.5–23 (21.6).<sup>f</sup>

<sup>a</sup> Mervyn G. Palmer.

<sup>b</sup> M. A. Carriker, jr.

<sup>c</sup> H. Watson.

<sup>d</sup> Sharpe, Cat. Birds Brit. Mus., ii, 1875, 276. The specimen described evidently beginning to assume adult dress.

<sup>e</sup> Four specimens.

<sup>f</sup> Eight specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
One adult male from western Colombia (Cauca Valley).....	272	162	18.5
One adult male from western Panama.....	280	164	21.5
One adult male from Costa Rica.....	272	161	22
One adult male from Nicaragua.....	285	171.5	22
FEMALES.			
One adult female from western Colombia (Dagua Valley).....	267	160	23
One adult female from northern Colombia (Rio Atrato).....	255	154	19.5
Three adult females from western Panama.....	273.7	160.8	21.5
One adult female from Nicaragua.....	293	179.5	22
One adult female from Honduras.....	279	171	.....
One adult female from Chiapas.....	279	169	22

Southern Mexico, in States of Vera Cruz (Jalapa), Oaxaca (Tehuantepec City; Tapana; Santa Efigénia; Cacoprieto), and Chiapas (Socunusco; Huehuetán), and southward through Guatemala (Mazatenango; Cajabón), British Honduras (Cayo), Honduras (Santa Ana), Nicaragua (Vizagua; Chontales; Mombacho), Costa Rica (San José; El Hogár), Panamá (Volcán de Chiriquí; Boquete de Chitra; Divala; Bugaba; near Gatún), and Colombia (Rio Atrato; Bogotá; Rio Frio, Cauca; La Maria, Dagua Valley) to western Ecuador (Foreste del Rio Peripa; Bulúm).<sup>a</sup>

*Ciccaba nigrolineata* SCLATER, Proc. Zool. Soc. Lond., 1859, 131 (s. Mexico; coll. Norwich Mus.); Trans. Zool. Soc. Lond., iv, pt. vi, 1859, 268, pl. 63.—SALVIN, Ibis, 1866, 195 (Mazatenango, Guatemala); Proc. Zool. Soc. Lond., 1870, 216 (Boquete de Chitra, Panama; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (San José, Costa Rica); Bull. U. S. Nat. Mus., no. 4, 1876, 37 (Tehuantepec City, Oaxaca).—FRANTZIUS, Journ. für Orn., 1869, 366 (Costa Rica). FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 164 (Jalapa, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 27 (Jalapa, Vera Cruz; Tapana, Santa Efigenia, Cacoprieto, and Tehuantepec, Oaxaca; Mazatenango and Cajabon, Guatemala; Cayo, Brit. Honduras; Mombacho, Nicaragua; San José, Costa Rica; Boquete de Chitra, Panama; Colombia).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 33 (Foreste del Rio Peripa, w. Ecuador; crit.).—HARTERT, Novit. Zool., ix, 1902, 605 (Bulum, n. w. Ecuador).

[*Ciccaba*] *nigrolineata* SHARPE, Hand-list, i, 1899, 295.

[*Ciccaba*] *nigro-lineata* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.

*Cacciba nigrolineata* STONE, Proc. Ac. Nat. Sci. Phila., 1890, 126 (Jalapa, Vera Cruz).

[*Syrnium*] *nigrolineatum* GRAY, Hand-list, i, 1869, 49, no. 525.

*Syrnium nigrolineatum* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 276 (Veragua, Panama).—ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 125 (Costa Rica).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 26 (Volcan de Chiriqui, Panama).

*Syrnium nigrolineatum nigrolineatum* BANGS, Proc. Biol. Soc. Wash., xxiii, May 4, 1910, 72 (La Maria, Dagua Valley, w. Colombia; crit.).

*Strix nigrolineata* ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 111 (Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 477 (El Hogar, Costa Rica).

Footnote—Continued.

Locality.	Wing.	Tail.	Culmen, from cere.
SEX UNKNOWN.			
One adult from central Colombia (Bogota).....	260	150.5	21.5
One adult from eastern Panama (Canal Zone).....	271	164.5	22
Two adults from Costa Rica.....	273.5	167	20.5
One adult from Chiapas.....	278	169	21.5

The series examined is remarkably uniform as to coloration, and I am unable to detect any differences according to locality.

<sup>a</sup> I have not seen specimens from Ecuador.



## CICCABA VIRGATA VIRGATA (Cassin).

## CASSIN'S OWL.

*Lighter phase.*

*Adults (sexes alike).*—General color of upper parts deep to dark grayish brown, broken by irregular transverse small mottlings, spots or zigzag bars of light grayish buffy and irregular vermiculations of dusky, but varying greatly in the distinctness of these markings, the general surface sometimes nearly uniform dusky except for the pale brown or buffy mottlings or irregular bars; outer webs of exterior scapulars for greater part ochraceous-buff, or white more or less suffused with buff, margined or mottled terminally with blackish, and margined along inner side by a blackish shaft-streak; outermost middle wing-coverts usually with large, irregular spots of buffy or pale tawny; secondaries and proximal primaries dusky banded with mottled light grayish brown, the dusky interspaces mottled with lighter toward edges; longer primaries with the paler bands much paler (buffy or whitish) and mostly immaculate on proximal half or more of the quills, and margined on each side by a more or less distinct line of dusky; tail blackish brown or brownish black, crossed by four bands of mottled gray, or gray and white (white always predominating on inner webs) and rather broadly tipped with white or mottled gray and white; "eyebrows" (superciliary region) pale brownish buffy, the feathers margined or tipped with dark sooty brown; lores dull pale grayish buffy to dull brownish white, with bristly shafts black, except toward base; auricular and suborbital regions pale buffy brown, mottled with dusky and with paler shaft-streaks, to dark sooty brown or dusky narrowly streaked with pale brownish buffy or dull buffy whitish; facial margin or rim brownish buffy to buffy whitish more or less spotted or flecked with dusky, from behind middle of ears downward; center of throat brownish, streaked or otherwise variegated with dusky; rest of under parts dull cinnamon-buff (the exposed surface of feathers on sides, flanks, etc., paler (sometimes dull whitish), deepening into buffy cinnamon on legs, each feather of sides and flanks and sides of abdomen, sometimes also those of median portion of breast and chest, with a broad, linear, streak or stripe of blackish brown or dusky; sides of breast and chest usually with coarse transverse mottlings of dark sooty brown; legs more or less mottled transversely (usually rather sparsely) with brown or dusky; under tail-coverts immaculate pale buff to buffy white, the longer coverts sometimes with indistinct mottlings or streaks of brown or dusky on distal portion; bill light dull yellowish; iris brown; toes dull brownish in dried skins, olive or olive-yellowish in life.

*Darker phase.*

Similar to the lighter phase, as described above, but ground color of under parts wholly buffy cinnamon; or, whole chest and breast

transversely mottled, or irregularly barred, with dusky and pale buffy brownish or dull grayish buffy, the ground color of posterior under parts sometimes wholly buffy-cinnamon, sometimes partly pale cinnamon-buff.

*Young (both phases).*—Remiges and rectrices (if developed) as in adults; rest of plumage (down) immaculate cinnamon-buff, the face much paler buff, the scapulars, interscapulars, and wing-coverts with bars or sagittate markings of grayish dusky.

*Adult male.*—Length (skins), 285–375 (311); wing, 210–251 (227.6); tail, 125–151 (127.3); culmen, from cere, 17–21.5 (18.5).<sup>a</sup>

*Adult female.*—Length (skins), 305–363 (330); wing, 225–252 (240.8); tail, 130–150 (138.4); culmen, from cere, 17.5–22.5 (19.9).<sup>b</sup>

<sup>a</sup> Twenty specimens.

<sup>b</sup> Twenty-two specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
One adult male from northeastern Colombia (Santa Marta) .....	225	129.5	17
Two adult males from eastern Panama (Cana) .....	222.5	130.5	18.5
One adult male from western Colombia (Rio Cauca) .....	231	132	18.5
Two adult males from eastern Panama (Canal Zone) .....	240.5	144.2	19.7
Two adult males from western Panama (Chiriqui) .....	225	128	17.7
Four adult males from Costa Rica .....	229.5	136.8	18.5
Two adult males from Nicaragua .....	221	124.5	17.7
One adult male from Honduras .....	233	140	20.5
Four adult males from British Honduras .....	221	132.0	18.2
One adult male from Campeche .....	224	133.5	18.5
One adult male from Tabasco .....	230	136	18.5
Two adult males from Vera Cruz .....	230	135.5	18.7
Two adult males from Tamaulipas ( <i>C. v. tamaulipensis</i> ) .....	236	142.7	18.7
Two adult males from Oaxaca ( <i>C. v. squamulata</i> ) .....	250	149.2	20.2
Three adult males from Michoacan ( <i>C. v. squamulata</i> ) .....	250.7	148.3	19.7
One adult male from Jalisco ( <i>C. v. squamulata</i> ) .....	243	139	18.5
Two adult males from Sinaloa ( <i>C. v. squamulata</i> ) .....	245	148.7	18.2
One adult male from Tepic ( <i>C. v. squamulata</i> ) .....	239	145	19
FEMALES.			
One adult female from western Colombia (Rio Cauca) .....	240	147	20
Two adult females from eastern Panama (Canal Zone) .....	250	138.2	21.2
One adult female from western Panama (Chiriqui) .....	243	143	19
Four adult females from Costa Rica .....	241	134.6	19.4
Six adult females from Nicaragua .....	234.7	132.2	19.8
One adult female from Salvador .....	248	144.5	19.5
Two adult females from British Honduras .....	249	147.2	19.5
One adult female from Chiapas .....	236	141	19.5
One adult female from Yucatan .....	241	143	21.5
One adult female from Campeche .....	240	139	19.5
Two adult females from Vera Cruz .....	240	142.2	20.7
One adult female from Michoacan ( <i>C. v. squamulata</i> ) .....	265	163	21
One adult female from Jalisco ( <i>C. v. squamulata</i> ) .....	250	147	20
Five adult females from Sinaloa ( <i>C. v. squamulata</i> ) .....	249.2	153.4	19.8
Three adult females from Tepic ( <i>C. v. squamulata</i> ) .....	251.7	154.8	20.8

Southeastern Mexico, in States of Vera Cruz (Córdova; Cofre de Perote; Buena Vista; Miradór; Medellín; Jalapa; Minatitlán), Oaxaca (Cacoprieto), Tabasco (Teapa; Montecristo), Chiapas (Tuxtla; Ocuilapa), Campeche (Apazote), and Yucatán (Izamál; Calotmúl; Quintana-Roo; Puerto Morelos; Meco Island), and southward through Guatemala (Volcán de Fuego; Choctúm; Cobán; Calderas; Dueñas; Retalhuleu; Savana Grande), Salvadór (San Salvadór), Honduras, British Honduras (Orange Walk; Belize; San Felipe; Toledo District; pine ridge near Manatee Lagoon; Manatee River), Nicaragua (Savala, Matagalpa; Ocotal; Jalapa; Chinandega; Volcán de Chinandega; Rio Coco; Rio Escondido; San Rafael del Norte), Costa Rica (San José; Santa Rosa; Alajuela; Cartago; Volcán de Irazú; Escazú; Guayabo; Liberia; Laguária, Dota; Dota Mountains; El Pozo de Térraba; Boruca), and Panamá (Boquerón, Boquete, and Bugaba, Chiriquí; Calovévora, Chitra, and Calobre, Veragua; Lion Hill, Canal Zone; Cana, Darién) to Colombia (Rio Frio, Cauca; San Lorenzo and Puebla Viejo, Santa Marta; Bogotá<sup>a</sup>), Venezuela,<sup>a</sup> Trinidad<sup>a</sup> (Caparo; Chaguanas), Cayenne,<sup>a</sup> and western Ecuador<sup>a</sup> (Macháy; Bulúm)

(??) *Strix fasciata* (not *Ulula fasciata* Des Murs, 1846) VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 21 (Martinique [?]).

*Syrnium virgatum* CASSIN, Proc. Ac. Nat. Sci. Phila., iv, 1848, 124 ("South America;" coll. Ac. Nat. Sci. Phila.); Ann. and Mag. N. H. (2), iv, 1849, 228 (reprint); Journ. Ac. Nat. Sci. Phila., ii, pt. i, 1850, 51, pl. 3.—STRICKLAND, Orn. Syn., i, 1855, 193.—SCLATER, Proc. Zool. Soc. Lond., 1856, 285 (Cordova, Vera Cruz); 1858, 132 (s. Mexico; Central America).—SCLATER and SALVIN, Ibis, 1859, 221 (Guatemala); Proc. Zool. Soc. Lond., 1864, 370 (Lion Hill, Panama).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 317 (Lion Hill, Panama); ix, 1868, 132 (Dota, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 366 (Costa Rica).—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 271 (Jalapa, Vera Cruz; Volcan de Fuego, Guatemala; Costa Rica; Calovevora, Veragua; Caracas, Venezuela; "Brazil").—BOUCARD, Proc. Zool. Soc. Lond., 1883, 456 (Yucatan).—ZELEDON, Anal. Mus. Nac. C. R., i, 1887, 125 (Alajuela, Liberia, San José, and Cartago, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 520 (Rio Escondido, Nicaragua).—CHAPMAN, Bull. Am.

Footnote—Continued.

Specimens from Santa Marta, Colombia, and Cana, Darien, are the darkest of the entire series, while examples from the Cauca Valley, western Colombia, are not different, that I can see, from birds from Costa Rica, etc. It is possible that a sufficient series of specimens from northern South America may show that true *C. virgata* (a darker bird) is restricted to Venezuela, northern Colombia, and the extreme eastern end of the Isthmus of Panama; in which case the Central American bird would have to be called *Ciccaba virgata lineata*, *Syrnium lineatum* Lawrence having been based on specimens from Lion Hill, Canal Zone. The lighter colored phase, with whitish, extensively striped, under parts, is relatively more numerous northward, especially in southeastern Mexico, where specimens incline toward *C. v. squamulata* and *C. v. tamaulipensis*.

<sup>a</sup> I have not seen specimens from these localities and countries.



- Mus. N. II., vi, 1894, 67 (Trinidad; notes).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 157 (Puebla Vieja, Santa Marta, Colombia); Proc. New Engl. Zool. Club, iii, 1902, 26 (Boquete, 4,000 ft., and Bugaba, Chiriqui, Panama).
- [*Syrnium*] *virgatum* GRAY, Hand-list, i, 1869, 49, no. 529.
- Ulula virgata* SCHLEGEL, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 15.
- Ciccaba virgata* SALVIN, Proc. Zool. Soc. Lond., 1870, 216 (Chitra, Calovevora, Calobre, and Bugaba, Veragua, Panama); Ibis, 1889, 374 (Meco I., Yucatan; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1873, 304 (Chyavetas, e. Peru); 1879, 539 (Concordia, Antioquia, Colombia).—TACZANOWSKI, Orn. du Pérou, i, 1884, 182.—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 110 (Machay, Ecuador).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 126 (Mexico; Cayenne; Bogota; Trinidad).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 29, part (Tampico, Tamaulipas; Jalapa, Cofre de Perote, Orizaba, and Cordova, Vera Cruz; Cacoprieto, and Tapaná, Oaxaca; Teapa, Tabasco; Tuxtla, Chiapas; Izamal, Colutmul, and Meco I., Yucatan; Choctum, Coban, Calderas, Dueñas, Savana Grande, and Retalhuleu, Guatemala; Orange Walk and San Felipe, Brit. Honduras; San Rafael del Norte and Rio Escondido, Nicaragua; San José, Liberia, Alajuela, Cartago, Volcan de Irazu, Dota Mts., Escazu, and Santa Rosa, Costa Rica; Volcan de Chiriqui, Bugaba, Chitra, Calovevora, Calobre, and line of Panama Railway, Panama; Colombia; Venezuela).—HELLMAYR, Novit. Zool., xiii, 1906, 45 (Caparo and Chaguanas, Trinidad; crit.).—BERLEPSCH, Novit. Zool., xv, 1908, 288 (Cayenne).
- [*Ciccaba*] *virgata* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.—SHARPE, Hand-list, i, 1899, 295.—HARTERT, Novit. Zool., ix, 1902, 605 (Bulum, n. w. Ecuador.)
- [*Nyctimene*] *virgata* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 252 (Jalapa, Vera Cruz; Central America).
- Macabra virgata* GURNEY, Cat. Birds of Prey, 1894, 39.
- Strix virgata* CARRIKER, Ann. Carnegie Mus., vi, 1910, 477 (near Cartago, Guayabo, Volcan de Irazu, Escazu, El Pozo de Terraba, and Boruca, Costa Rica).
- Syrnium lineatum* (not *Strix lineata* Shaw) LAWRENCE, Ann. Lyc. N. Y., vii, 1862 (signature dated Feb., 1862), 462 (Lion Hill, Panama; coll. G. N. Lawrence).
- (?) *Ciccaba huhula* (not *Strix huhula* Daudin) SCLATER, Proc. Zool. Soc. Lond., 1858, 96 (s. Mexico; crit.).

### CICCABA VIRGATA SQUAMULATA (Bonaparte).

#### SQUAMULATED OWL.

*Adults (both sexes).*—Similar to the lighter phase of *C. v. virgata* but upper parts lighter brown and more or less spotted with white, especially on pileum and hindneck; under parts much paler, the general color dull white, even on breast and chest, the legs paler cinnamon-buffy, sometimes immaculate.

*Young.*—Much paler than corresponding stage of *C. v. virgata*, the general color light cinnamon-buff or deep pinkish buff, the face nearly white; scapulars, interscapulars, and wing-coverts without concealed bars of dusky.

*Adult male.*—Length (skins), 330–345 (337); wing, 239–254 (247.1); tail, 139–151 (143.9); culmen, from cere, 18–20 (19.3).<sup>a</sup>

<sup>a</sup> Nine specimens.

*Adult female*.—Length (skins), 335–392 (353); wing, 240–265 (251.6); tail, 147–163 (154.1); culmen, from cere, 18.5–21.5 (20.2).<sup>a</sup>

Western and southwestern Mexico, in States of Sinaloa (Mazatlán; Presidio de Mazatlán; Escuinapa; Culiacán; Mount Juan Lisiarraga), Jalisco (La Pisagua; Sal se Puerdes, 5,000 feet; Hacienda San Marcos, near Zapotlán; Acatan; Hacienda del Lazo; Wakenakili Mountains), Michoacán (La Salada; near Ahuacana), Colima (Colima; Plains of Colima), and Oaxaca (Santa Efigénia; Tehuantepec City), and Territory of Tepic (Rio Ameca, near Amatlán de Cañas; Arroyo de Padión; Sierra de Nayarit).

[*Syrnium*] *squamulata* BONAPARTE, Consp. Av., i, 1850, 53 (Mexico; coll. Leyden Mus.; ex *Strix squamulata* Lichtenstein, manuscript).

*Athene squamulata* LICHTENSTEIN, Nomencl. Mus. Berol., 1854, 7.

*Ciccaba squamulata* LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 37 (Tehuantepec City, Oaxaca; crit.; descr.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 30 (Mazatlan and Presidio de Mazatlan, Sinaloa; Sierra de Nayarit, Tepic; Hacienda San Marcos near Zapotlan, Hacienda del Lazo, and Acatan, Jalisco; Colima; Plains of Colima; Tehuantepec, Oaxaca).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 347 (Escuinapa, etc., s. Sinaloa; crit.).

[*Ciccaba*] *squamulata* SHARPE, Hand-list, i, 1899, 295.

*S[trix] v[irgata] squamulata* PHILLIPS, Auk, xxviii, Jan., 1911, 77, in text.

*Syrnium virgatum* (not of Cassin) LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 298 (Mazatlan; Colima):

### CICCABA VIRGATA TAMAULIPENSIS (Phillips).

#### TAMAULIPAS OWL.

Very similar to *C. v. squamulata* but pileum, back, etc., barred with pale brownish buffy, and devoid of white spots.

*Adult male*.—Length (skins), 320–330 (325); wing, 235–238 (236.5); tail, 137–148.5 (142.7); culmen, from cere, 18–19.5 (18.7).<sup>b</sup>

Northeastern Mexico, in State of Tamaulipas (Rio Martinez; Sierra Madre above Ciudad Victoria?; Tampico?).

(?) *Ciccaba virgata* (not *Syrnium virgatum* Cassin) SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 29, part (Sierra Madre above Ciudad Victoria, Tamaulipas).

*Strix virgata tamaulipensis* PHILLIPS, Auk, xxviii, Jan., 1911, 76 (Rio Martinez, w. Tamaulipas; coll. Mus. Comp. Zoology).

#### Genus NYCTEA Stephens.

*Nyctea* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 63. (Type, *Strix erminea* Shaw=*S. nyctea* Linnaeus.)

*Nyctia* (emendation) SWAINSON, Classif. Birds, ii, 1837, 217.

<sup>a</sup> Ten specimens.

<sup>b</sup> Two specimens; no females seen.

*Haemeria* <sup>a</sup> ZANDER, Naturg. Vög. Mecklenburgs, Heft 2, 1838, 123, 128. (Type, *Strix nivea* Thunberg=*S. nyctea* Linnæus.)

*Leucybris* <sup>b</sup> SUNDEVALL, Met. Nat. Av. Disp. Tent., 1873, 105. (Type, *Strix nyctea* Linnæus.)

Very large, strongly built Bubonidæ (wing about 394–465 mm.) with minute or rudimentary ear-tufts; <sup>c</sup> external ear-openings small, simple, nonoperculate, symmetrical; very long, hair-like feathers on lores and feet, nearly concealing bill and claws, and coloration white, more or less barred or transversely spotted with dusky.

Bill stout, nearly hidden by the long and dense antrorse bristle-like loreal feathers; cere much shorter than chord of culmen. Nostril rather large, broadly oval or nearly circular, <sup>d</sup> opening in anterior edge of cere. External ear-openings relatively small (their greatest vertical length less than diameter of eye), nearly oval, without free dermal margin or median transverse ligamentous bridge. Wing large, with longest primaries exceeding distal secondaries by less than one-third the total length of wing; seventh and eighth, or seventh, eighth, and ninth <sup>e</sup> primaries longest, the tenth (apparent outermost) about equal to sixth; <sup>f</sup> five outer primaries with inner webs deeply emarginated (less distinctly on fifth). Tail more than half as long as wing, distinctly rounded, the longer under tail-coverts extending to its tip. Tarsus longer than middle toe without claw, very densely covered, all round, with long, soft, hair-like feathers, the toes similarly clothed, the long hair-like feathers nearly (sometimes quite) concealing the claws. Ear-tufts minute or rudimentary. Physiognomy peculiar, through wide separation of the eyes and their narrowness vertically, and but slightly flattened face.

*Coloration*.—Adults pure white, more or less barred or transversely spotted with dusky (some adult males almost immaculate); young plain sooty.

*Range*.—Arctic and subarctic circumpolar districts, migrating southward during severe winters. (Monotypic.)

#### NYCTEA NYCTEA (Linnæus.)

##### SNOWY OWL.

*Adult male*.—Plumage pure white, sometimes nearly immaculate but usually broken, more or less, with transverse spots or bars of clear

<sup>a</sup> *Αἰμυρός*, bloody, murderous. (Richmond.)

<sup>b</sup> “*Λευχός*, albus, et *ὄβρις*, nomen Bubonis antiquum.” (Sundevall.)

<sup>c</sup> These, however, are so small as to be discernible only on close examination.

<sup>d</sup> In dried skins sometimes appearing oval or broadly elliptical and obliquely vertical through shrinkage of the adjacent membrane.

<sup>e</sup> Third and fourth, or second, third, and fourth, from outside, not counting the rudimentary eleventh (first) primary.

<sup>f</sup> Fifth from outside.



slaty brown on pileum, back, and scapulars, the remiges and rectrices with subterminal spots of dusky; under parts usually marked, more or less distinctly, on abdomen, sides, and flanks with narrow bars of clear slaty brown, but these sometimes wholly absent; bill black; iris lemon yellow; claws black; length (skins), 530–600 (558); wing, 394–422 (408.1); tail, 220–244 (230.2); culmen, from cere, 24.5–27.5 (25.7).<sup>a</sup>

*Adult female*.—Much darker than the adult male, only the face, foreneck, median portion of breast, and the feet being immaculate, other portions being heavily barred with dark brownish slate, the pileum and hindneck spotted with the same; bill, etc., as in adult male; length (skins), 590–710 (647); wing, 425–465 (446.4); tail, 235–275 (254); culmen, from cere, 26–28 (27.5).<sup>b</sup>

*Young*.—Uniform dusky brown or deep sooty grayish, paler on legs and feet.

Northern portion of Northern Hemisphere; in North America breeding from far within the Arctic Circle southward to northern Ungava, central Keewatin, central Mackenzie, and northern British Columbia;<sup>c</sup> in winter southward to more northern United States, irregularly (according to severity of the season), but sometimes numerous, to Virginia, Illinois, Kansas, Colorado (Fort Collins; Colorado Springs; near Breckenridge; West Valley), and mouth of Columbia River, casually or rarely to South Carolina (Chester County, December, 1886; near Winnsboro, Fairfield County, Nov. 28, 1908); Louisiana (Baton Rouge; Bayou des Allemands, winter of 1878–79), Texas, and California (Sonoma, Alameda, and Santa Cruz counties);

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Eleven specimens.

Locality.	Wing.	Tail.	Culmen.
MALES.			
One adult male from northern Europe.....	417	237	25
One adult male from Labrador.....	402	235	24.5
One adult male from Vermont.....	407	240	25.5
Seven adult males from Alaska.....	408.3	229.3	26.2
Four adult males from Bering Island, Kamchatka.....	407	226.2	25.5
FEMALES.			
Two adult females from Ungava and Labrador.....	449	249	28.7
Six adult females from Mackenzie.....	446.3	255.3	27.5
Three adult females from Bering Island.....	444.7	254.7	26.5

<sup>c</sup> It has been claimed that this species breeds as far southward as lat. 53° in Labrador, in Newfoundland, Nova Scotia, New Brunswick, northern Maine, northern New York (Adirondack Mountains), and northern Manitoba (Lake Winnipeg); but the records have not been verified.

accidental in the Bermudas (2 specimens autumn of 1843, 1 specimen Nov. 29, 1853).

[*Strix*] *nyctea* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 93 (Europe and N. Am.; based on Fauna Suecica, 54, and *Aluco albus diurnus* Edwards, Av. 61, pl. 61); ed. 12, i, 1766, 132.—BRÜNNICH, Orn. Bor., 1764, 7.—GMELIN, Syst. Nat., i, pt. i, 1788, 201.—LATHAM, Index Orn., i, 1790, 57.

*Strix nyctea* FORSTER, Philos. Trans., lxxii, 1772, 385 (Hudson Bay).—FABRICIUS; Fauna Groenl., 1780, 60.—BODDAERT, Tabl. Pl. Enl., 1783, 27.—DAUDIN, Traité d'Orn., ii, 1800, 188.—TEMMINCK, Cat. Syst., 1807, 17; Man. d'Orn., i, 1815, 48; Tabl. Méth., 1836(?), 6.—VIEILLIOT, Ois. Am. Sept., i, 1807, 46, pl. 18; Faun. Franç., 1820-30, 48, pl. 23, fig. 2; Nouv. Dict. d'Hist. Nat., vii, 1817, 30 (n. Europe; Hudson Bay; United States in winter).—SHAW, Gen. Zool., vii, 1809, 240.—MEYER and WOLF, Taschenb., i, 1810, 75, 184, plate.—WILSON, Am. Orn., iv, 1811, 53, pl. 32, fig. 1.—NAUMANN, Vög. Deutschl., Nachtr., 1808(?), 241, pl. 33, fig. 65; ed. 2, i, 1822, 417, pl. 41.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 36.—SWAINSON and RICHARDSON, Fauna, Bor.-Am., ii, 1831, 88.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 116; 2d ed., 1840, 121.—AUDUBON, Orn. Biog., ii, 1834, 135, pl. 121; v, 1839, 382.—SUNDEVALL, Svensk. Fogl., 1856-58, pl. 24, figs. 3, 3\*.—SCHLEGEL, Vog. Nederl., 1859, pl. 44.—SCHALOW, Journ. für Orn., 1891, 249 (Sitka, Alaska).

*S[trix] nyctea* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 353; Obs. Wilson's Am. Orn., 1826, [14].—TEMMINCK, Man. d'Orn., ed. 2, iii, 1835, 45.

*Stryx nyctea* PALLAS, Zoogr. Rosso-Asiat., i, 1826, 312.—MALMGREN, Oefv. k. Vet.-Ak. Förh., 1863, 114; 1864, 411.

*Surnia nyctea* JAMESON, ed. Wilson's Am. Orn., i, 1831, 92.—SELBY, Illustr. Brit. Orn., i, 1833, 95, pl. 23.—GOULD, Birds Europe, i, 1835, pl. 43, and text.—AUDUBON, Synopsis, 1839, 21; Birds Am., oct. ed., i, 1840, 113, pl. 28.—DE KAY, Zool. N. Y., ii, 1844, 22, pl. 9, fig. 20.—GIRAUD, Birds Long Island, 1844, 22.—JARDINE, Contr. Orn., 1848, 81 (Bermudas).—MARTENS, Journ. für Orn., 1859, 212 (Bermudas).—BLAND, An. Rep. Smithson. Inst. for 1858 (1859), 287 (Bermudas).

*S[urnia] nyctea* KAUP, Jardine's Contr. Orn., 1852, 107.

*Noctua nyctea* CUVIER, Règne Anim., i, 1817, 332.—LESSON, Man. d'Orn., i, 1828, 110; Traité d'Orn., 1831, 101.—SCHLEGEL, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 43.

*Syrnium nyctea* KAUP, Sk. Entw. Eur. Thierw., 1829, 59, 190.

*Syrnia nyctea* MACGILLIVRAY, Rapacious Birds Great Brit., 1836, 348, 473; Hist. Brit. Birds, iii, 1840, 407.

*Nyctea nyctea* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 376; 3rd ed., 1910, 176.—SETON, Auk, iii, 1886, 155 (near Lake Winnipeg, Manitoba, rare summer resident).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 153 (Sitka northward; habits).—RIDGWAY, Orn. Illinois, i, 1889, 422.—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 136 (numerous at mouth of Columbia R., winter of 1889-90).—LOOMIS, Auk, viii, 1891, 55 (Chester Co., South Carolina, Dec., 1886, 1 spec.).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 389, pl. 12, fig. 19 (egg).—COOKE, Auk, xi, 1894, 183 (Ft. Collins, Colorado); Birds Colorado, 1897, 80 (rare winter visitant; records); Bull. 44, Col. Agric. Exp. Sta., 1898, 161 (Colorado Springs, 2 specs.); Bull. 56, 1900, 206 (near Breckenridge and Wet Valley, Colorado).—THORNE, Auk, xii, 1895, 214 (Ft. Keogh, Montana, winter 1889-90, 1886-87, 1890-91).—SCHALOW, Journ. für Orn., 1895, 474 (w. Greenland).—MERRILL (J. C.), Auk, xiv, 1897, 353 (Ft. Sherman, Idaho, winter).—BEYER, Proc. La. Soc. Nat.

for 1897-99 (1900), 101 (Baton Rouge, Louisiana, 1 spec., no date; Bayou des Allemands, 1 spec., winter 1878-79).—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 35 (California range).—RATHBUN (S. F.), Auk, xix, 1902, 134 (Seattle, Washington, flight, Nov. and Dec., 1896).—DEANE, Auk, xix, 1902, 271-283 (unusual abundance in New England and Canada during winter of 1901-'2); xxiii, 1906, 283-298 (unusual abundance in winter of 1905-6; records).—BUTLER, Auk, xxiii, 1906, 271 (Indiana records).—BEYER, ALLISON, and KOPMAN, Auk, xxv, 1908, 443 (Baton Rouge and Bayou des Allemands, Louisiana, winter 1878-79).—KERMODE, Provincial Mus. Victoria, 1909, 47 (s. in winter to mouth of Fraser R., Chilliwack, and Okanogan, occasionally to Vancouver I.; resident in n. Brit. Columbia).—JEWETT, Auk, xxvii, 1910, 340 (Sheridan, Dougal Co., Oregon, 1 spec., Nov. 30, 1909).—WAYNE, Auk, xxvii, 1910, 454 (near Winnsboro, Fairfield Co., South Carolina, Nov. 28, 1908).

*N[yc]tea nyctea* RIDGWAY, Man. N. Am. Birds, 1887, 264.

[*Nyc]tea nyctea* SHARPE, Hand-list, i, 1899, 284.

*Ulula nyctea* GIEBEL, Vög., 1860, 279.

*Strix* (*Surnia*) *nyctea* RADDE, Reisen, 1863, 124.

*Bubo nyctea* SEEBOHM, Ibis, 1882, 373 (Archangel, Russia).

*Strix nivea* THUNBERG, K. Vet. Acad. Nya Handl., xix, 1798, 184 (Lappmark).—DAUDIN, Traité d'Orn., ii, 1800, 190.

*Noctua nivea* BREHM, Isis, 1834, 246.

*N[yc]tea nivea* GRAY, Gen. Birds, i, 1844, 34.

*Nyctea nivea* GRAY, Gen. Birds, i, 1844, pl. 12, fig. 2.—REINHARDT, Journ. für Orn., 1854, 438 (Greenland); Ibis, 1861, 5 (Greenland).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 190; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 63.—STRICKLAND, Orn. Syn., i, 1855, 194.—BAIRD, Cat. N. Am. Birds, 1859, no. 61.—COUES and PRENTISS, An. Rep. Smithsonian. Inst. for 1861 (1862), 402 (District Columbia in winter).—BOARDMAN, Proc. Bost. Soc. N. H., ix, 1862, 123 (Calais, Maine, probably breeding).—DRESSER, Ibis, 1865, 330 (San Antonio, Texas).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity of New York City).—COUES, Proc. Bost. Soc. N. H., xii, 1868, 120 (South Carolina); Check List, 1873, no. 325.—GOULD, Birds Great Brit., i, 1863, pl. 34, and text.—BROWN, Ibis, 1868, 419 (Vancouver I.).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 273 (Alaska).—COOPER, Orn. Calif., 1870, 447 (no California record to date).—SNOW, Birds Kansas, 1873, 2 (rare in winter).—ALLEN, Bull. Nutt. Orn. Club, vii, 1881, 128 (Ft. Walla Walla, Washington, Dec. 1).—DEANE, Auk, xxiii, 1906, 100 (large flight in n. e. Illinois, Nov. 14-Dec. 9, 1905).

[*Nyc]tea nivea* BONAPARTE, Consp. Av., i, 1850, 36.—GRAY, Hand-list, i, 1869, 39, no. 377.—COUES, Key N. Am. Birds, 1872, 205.

*Nyctea scandiaca*, var. *nivea* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 61, footnote.

*Haemeria nivea* ZANDER, Naturg. Vög. Mecklenbergs, heft 2, 1838, 119.

*Leucybris nivea* SUNDEVALL, Met. Nat. Av. Disp. Tent., 1872, 105.

*Str[ix] candida* LATHAM, Index Orn., Suppl., 1801, p. xiv (based on *La Chouette blanche* Levaillant, Ois. d'Afr., etc., 172, pl. 45; *Strix nivea* Daudin, ii, 190; *Ermine Owl* Latham, Gen. Syn. Sup., ii, 60, no. 7).

*Nyctia candida* SWAINSON, Classif. Birds, ii, 1837, 217.

*Nyctea candida* BONAPARTE, Geog. and Comp. List, 1838, 6.

*Strix erminea* SHAW, Gen. Zool., vii, pt. i, 1809, 251 (based on *Strix candida* Latham; *La Chouette blanche* Levaillant, Ois., pl. 45; *Ermine Owl* Latham, Suppl., 2).

*Nyctea erminea* STEPHENS, Shaw's Gen. Zool., xiii, pt. iii, 1826, 63.

*Nyctea nivea europaea* BREHM, Verz. Samml. C. L. Brehm, 1866, 2.



- Nyctea nivea americana* BREHM, Verz. Samml. C. L. Brehm, 1866, 2.
- [*Strix*] *scandiaca* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 132 (Sweden; based on *Strix capite aurito, corpore albido* Linnæus, Fauna Suecica, 16).—LATHAM, Index Orn., i, 1790, 53.
- Strix scandiaca* VIEILLLOT, Nouv. Dict. d'Hist. Nat., ix, 1817, 600.—NUTTALL, Man. Orn. U. S. and Can., Water Birds, 1834, 561; Land Birds, ed. 2, 1840, 133.—MALMGREN, Journ. für Orn., 1865, 396.
- Nyctea scandiaca* NEWTON, ed. Yarrell's Hist. Brit. Birds, iii, 1872, 187.—DRESSER, Birds Europe, v, pt. xxiii-xxiv, 1873, 287.—COUES, Birds Northwest, 1874, 309; Check List, 2d ed., 1882, no. 479.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 125.—DEANE, Bull. Nutt. Orn. Club, ii, 1877, 9 (New England records for winter of 1876-77).—FEILDEN, Proc. Zool. Soc. Lond., 1877, 31 (North Polar Basin), 403 (Grinnell Land, lat. 82° 27' to 82° 40'; Discovery Bay, lat. 81° 44').—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 192; Nom. N. Am. Birds, 1881, no. 406.—BENDIRE, Bull. Nutt. Orn. Club, vii, 1882, 58 (Ft. Walla Walla, Washington).—NELSON, Cruise "Corwin" in 1881 (1883), 76 (resident in Alaska from mouth of Kuskokwim R. northward; habits).—MCLENNAN, Cruise of "Corwin," 1884, 117 (Kowak R., n. w. Alaska; habits).—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 216 (Bermudas; 2 specs. autumn 1843; 1 spec., Nov. 29, 1853).
- N[yc]tea scandiaca* COUES, Key N. Am. Birds, 2d ed., 1884, 510.
- [*Nyctea scandiaca*] var. *scandiaca* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 61.
- Nyctea scandiaca*, var. *arctica* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 70 (ex *Strix arcticus, capite levi, corpore toto niveo, the great white owl*, Bartram, Travels, 289).
- Nyctea scandiaca arctica* GOODE, Bull. U. S. Nat. Mus., no. 20, 1883, 331.
- B[ubo] scandiaca* . . . var. *arctica* RIDGWAY, Ann. Lyc. N. Y., x, Jan., 1874, 379 (Illinois).
- Nyctia arctica* BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 132 (Camp Harney, Oregon).
- Bubo nycterus* PYCRAFT, Trans. Linn. Soc. Lond., sec. ser., vii, 1898, 241.

#### Genus SURNIA Duméril.

- Surnia* DUMÉRIL, Zool. Analytique, 1806, 34. (Type, as designated by Gray, 1841, *Strix ulula* Linnæus.)
- Nycthierax* <sup>a</sup> SUNDEVALL, Met. Nat. Av. Disp. Tent., 1873, 106. (New name for *Surnia* Duméril.)

Medium sized Bubonidæ (wing about 218-251 mm.) without ear-tufts; with long and graduated tail, straight and narrow-tipped primaries, and very densely feathered toes.

Bill strong, the mandibular tomium with a very distinct terminal notch; cere on top much shorter than chord of culmen, straight, slightly ascending basally. Nostril relatively small, rather narrowly oval or elliptical, obliquely vertical, opening near middle of anterior edge of cere. External ear-openings rather small, vertically elliptical, symmetrical, without marginal flap or transverse ligament, the greatest diameter slightly less than diameter of eye, the upper end about opposite middle of the latter, the lower nearly on a line with

<sup>a</sup> *νύξ* nox et *ἰεραξ*, accipiter. (Sundevall.)

commissure. Wing moderate, pointed, with longest primaries exceeding distal secondaries by about one-third the total length of wing; seventh and eighth<sup>a</sup> primaries longest, the tenth (apparent outermost) equal to or longer than fifth;<sup>b</sup> four outer primaries with inner web emarginated (indistinctly on fourth); primaries relatively narrow and straight distally. Tail three-fourths as long as wing, or slightly more, graduated, the graduation equal to about one-fifth its total length. Legs and feet relatively small; tarsus longer than middle toe without claw, densely covered, all round, with long hair-like feathers, the toes similarly clothed (except on terminal phalanx and under side), the feathers overlapping basal portion of claws.

*Coloration*.—Adults with pileum and hindneck spotted with white and blackish, or dark brown, in varying relative proportion; a patch of uniform blackish or dark brown on each side of hindneck, and another across hinder portion of ear coverts; rest of upper parts brown, the scapulars heavily spotted or blotched, wings more or less spotted, upper tail coverts broadly and distinctly barred, and tail narrowly and indistinctly barred, with white; face and under parts white, the lower breast, belly, sides, flanks, and under tail-coverts very regularly barred with brown.

*Range*.—Boreal forests of Northern Hemisphere. (Monotypic.)

#### KEY TO THE SUBSPECIES OF *SURNIA ULULA*.

- a. Lighter colored, with white predominating on pileum, and white of scapulars less broken; barring on under parts less dense. (Northern parts of Eastern Hemisphere.).....*Surnia ulula ulula* (extralimital).<sup>c</sup>

<sup>a</sup> Third and fourth from outside, not counting the rudimentary and concealed eleventh primary.

<sup>b</sup> Sixth from outside.

<sup>c</sup> [*Strix*] *ulula* Linnæus, Syst. Nat., ed. 10, i, 1758, 93 (Sweden; based on Fauna Suecica, 52; *Ulula* Gesner, Aves, 773; etc.); ed. 12, i, 1766, 133.—*Surnia ulula* Bonaparte, Ucc. Eur., 1842, 22; Dresser, Birds Europe, v, pt. xi-xii, 1872, 301, pl. 311; Fritsch, Vög. Eur., 1854, pl. 11, fig. 5; Sharpe, Cat. Birds Brit. Mus., ii, 1875, 129.—[*Surnia ulula*] var. *ulula* Ridgway, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 75.—*Noctua ulula* Schlegel, Mus. Pays-Bas, Striges, 1862, 42.—(?) [*Strix*] *funerea* Linnæus, Syst. Nat., ed. 10, i, 1758, 93 (Europe; based on Fauna Suecica, 51; *Ulula flammeata* Frisch, Aves, pl. 98?); ed. 12, i, 1766, 133.—*Surnia funerea* Duméril, Zool. Anat., 1806, 34; Gould, Birds Europe, i, 1834, pl. 45 and text; Birds Great Brit., i, 1862, pl. 35 and text.—*Strix uralensis* (not of Pallas) Shaw, Gen. Zool., vii, 1809, 277, pl. 35.—*Strix nisoria* Meyer, Taschenb., i, 1810, 84 (new name for *S. funerea* Linnæus); Naumann, Vög. Deutschl., i, 1822, pl. 42, fig. 2.—*Stryx doliata* Pallas, Zoogr. Rosso-Asiat., i, 1826, 316 (no type locality mentioned; includes *S. u. caparoch*).—*Surnia doliata* Gurney, Cat. Birds of Prey, 1894, 40.—*Surnia ulula doliata* Rothschild, Novit. Zool., ix, 1902, 162 (Anklam, Russian Turkestan; crit.); Allen, Bull. Am. Mus. N. H., xxi, 1905, 245 (Marcova and Gichiga, n. e. Siberia); Clark (A. H.), Proc. U. S. Nat. Mus., xxviii, 1910, 59 (Petropaulski, Kamchatka;

- aa. Darker, with black predominating on pileum and white of scapulars much broken by black or blackish brown; barring on under parts more dense. (Northern North America.).....*Surnia ulula caparoch* (p. 774).

**SURNIA ULULA CAPAROCH (Müller).**

**AMERICAN HAWK OWL.**

Similar to *S. u. ulula*<sup>a</sup> but coloration much darker, the black and brown areas and markings not only darker in color but more extended, the whitish ones correspondingly reduced in extent; pileum with black predominating, and scapulars with the white areas much broken by bands of blackish brown, and barring on under parts denser.

*Adults (sexes alike).*—Above rich dark brown (nearly bone brown) darker anteriorly, where passing into black or brownish black on hindneck and pileum, lighter and more grayish brown posteriorly; each feather of pileum with a central small spot of white, those on forehead more circular, those on occiput more linear, as well as less numerous, the hindneck with larger V-shaped or cuneate spots, streaks or bars of white; a narrow streak of brownish black from above middle of eye backward along upper edge of auricular region, where it bends abruptly downward across terminal portion of the latter; confluent with this at about the middle of its vertical portion is another but broader blackish stripe which passes down side of hindneck, and another passes from occiput down median line of hindneck; between

Footnote—Continued.

crit.).—*Strix accipitrina* (not of Pallas) Bechstein, Vög. Deutschl., ii, 1791, 372, pl. 12.—*Surnia borealis* Lesson, Traité d'Orn., 1831, 100, part.

The inclusion of this form in the North American fauna on the ground of its alleged accidental occurrence in Alaska is, I now believe, a mistake. The specimen on which the record was originally based is now before me; and, while it shows as conspicuous white spotting on the pileum as the European and Siberian form, in other characters it seems not to differ from the American bird, and I think it had better be considered an abnormal example of the latter.

As to the claims of the bird from northeastern Asia to subspecific rank, I am not able, with the very small series available, to see that it differs from the European bird.

[Since the above remarks were put in type Dr. Hartert's treatment of the Palæarctic forms of this species has been seen by me. In "Die Vögel der paläarktischen Fauna" (Heft viii, Bd. ii, 2, August, 1913, pp. 1010-1013) Dr. Hartert recognizes three subspecies for the Palæarctic Region, as follows:

(1) *Surnia ulula ulula* (Linnæus), p. 1010; Northern Scandinavia to western Siberia.

(2) *Surnia ulula tianschanica* Smallbones (Orn. Monatsb., 1906, 27; *Surnia ulula korejewi* Sarudny and Loudon, Orn. Monatsb., 1907, 2); Tian Schan.

(3) *Surnia ulula pallasi* Buturlin (Orn. Monatsb., 1907, 100): Eastern Siberia; Kamchatka; Ussuriland.

It is not unlikely that the Alaskan specimen (from St. Michaels) above referred to may belong to the Eastern Siberian form; indeed, Hartert thus places it.]

<sup>a</sup> See p. 773.



these black stripes white predominates the brown forming irregular terminal or median transverse spots, or, on lower portion of hindneck, more linear spots or streaks; back plain brown; posterior scapulars variegated with partially concealed large transverse spots of white, the outermost ones with greater part of outer web white, broken by blackish brown bars or bands, the confluence of these white blotches producing a conspicuous elongated patch of white immediately above wing; rump with sparse, irregular, but usually transverse, spots of white, the upper tail-coverts with broader and more regular bars of the same, these about equal to the brown ones in width; outermost middle and greater wing-coverts with an ovoid spot of white on outer webs; secondaries crossed by about three transverse series of longitudinally ovoid spots of white (on edges) and very narrowly tipped with white; outermost primary coverts with one or two transverse series of white spots; primaries with about seven transverse series of white spots, these most developed on proximal portion of five outer quills, becoming indistinct or obsolete on proximal quills, all the primaries margined at tips with white; tail crossed by seven or eight very narrow bands or bars of white (the last one terminal), these bands becoming less distinct (sometimes obsolete) on lateral rectrices; "eyebrow" (superciliary region), lores, and face grayish white, the grayish appearance caused by black shafts to the feathers, the grayish white of face continued across lower part of throat, separating a large gular space of dark brown from an indistinct brown collar across upper chest, this collar confluent with the lower end of the auricular and cervical black bands, the space between which is white; ground color of under parts white, everywhere barred with chestnut-brown or burnt-umber, the bars sharply defined, averaging rather more than half as wide as the white interspaces, except on upper chest, where the white is so much in excess as to form a broken patch, below which the brown bars are broader, and somewhat coalesced; on legs and toes the bars narrower, more sparse, and less regular; under wing-coverts barred like sides, etc.; under surface of remiges dark slaty brown, with transverse, irregularly elliptical spots of white on inner webs (except distal portion), there being about seven of these on longest quill; bill yellowish; iris lemon yellow.

*Young*.—Upper parts dark sooty brown or sepia, the feathers of pileum and hindneck tipped with dull grayish buff, which forms the predominating color; scapulars and interscapulars indistinctly tipped with dull grayish buff; loreal and auricular regions plain brownish black, the rest of "face" dull whitish; under parts dull whitish, deeply shaded across chest with dark sooty brownish, the other portions being broadly but rather indistinctly barred with brown, these markings narrower and more confused anteriorly and on legs.

*Adult male*.—Length (skins), 353–394 (364); wing, 218–251 (239.6); tail, 160–191.5 (176.2); culmen, from cere, 17–19.5 (18.4).<sup>a</sup>

*Adult female*.—Length (skins), 350–383 (366); wing, 223–240 (232.9); tail, 172.5–182 (178.8); culmen, from cere, 18.5–20.5 (19.6).<sup>b</sup>

Northern North America; breeding in Hudsonian and Canadian life-zones, northward to limit of trees in Alaska, Yukon, Mackenzie, Keewatin, and Ungava, southward to Labrador (Hamilton River; Hamilton Inlet), Newfoundland (?), central Alberta, Montana (casually?), and southern British Columbia; winters, regularly, southward throughout Canadian Zone and northern portions of Transition Zone, irregularly or casually southward into the Upper Austral Zone, as far as Massachusetts (Framingham, January, 1860; Chatham, winter of 1883–84; Winchendon, 4 specimens, winters of 1886–87 and 1887–88; Lincoln, February, 1907), Rhode Island, eastern Pennsylvania (near Philadelphia), New Jersey, New York (Bay Ridge, Long Island; Clark's Mills, Oneida County, winter of 1885–86; Lewis County, Oct. 24 and Nov. 16, 1897; Ogdensburg, St. Lawrence County; near Holly, Orleans County), southern Ontario (Hamilton; Ottawa, Oct. 9, 1906), Ohio, southeastern Indiana (Franklin County, January, 1878)?,<sup>c</sup> Michigan (Port Huron, St. Clair County, Nov. 19, 1905), southern Wisconsin (Racine), northern Illinois (Kane County, September, 1869), Minnesota, Missouri (Mount Carmel, Audrain County, Dec. 26, 1884, Mar. 10, 1885, Jan. 28, 1886)?,<sup>c</sup> Nebraska, and Washington (Bellingham Bay); accidental in Bermuda(?),<sup>c</sup> and in British Islands (several records).

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Eight specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
One adult male from northern Russia ( <i>S. u. ulula</i> ).....	240	191.5	18.5
One adult male from northeastern Siberia ( <i>S. u. pallasi</i> ).....	232	182	18
Nine adult males from Alaska.....	231.8	177.8	18.1
One adult male from Ungava.....	222	160	19.5
Two adult males from Newfoundland.....	221	172.2	18.2
Two adult males from Alberta.....	232	181.2	19.2
FEMALES.			
One adult female from Norway ( <i>S. u. ulula</i> ).....	246	188	18
One adult female from northeastern Siberia ( <i>S. u. pallasi</i> ).....	231	180	18.5
Four adult females from Alaska (mainland).....	231	176.7	19.5
Two adult females from Kadiak Island, Alaska.....	234	183.2	20
One adult female from Ungava.....	232	176	20
One adult female from Labrador.....	239	181	19

<sup>c</sup>These records doubtful, especially the first and second.

- [*Strix*] *funerea* (not of Linnæus, 1758) LINNÆUS, Syst. Nat., ed. 12, i, 1766, 133.—GMELIN, Syst. Nat., i, pt. 1, 1788, 294.—LATHAM, Index Orn., i, 1790, 62.
- Strix funerea* FORSTER, Philos. Trans., lxii, 1772, 385 (Severn and Churchill rivers, Keewatin).—VIEILLOR, Nouv. Dict. d'Hist. Nat., vii, 1817, 20, part (cites Brisson, Orn., i, pl. 37, fig. 2).—TEMMINCK, Man. d'Orn., i, 1820, 86 part.—BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 35.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 92.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 115; 2d ed., 1840, 119.—AUDUBON, Orn. Biog., iv, 1839, 550, pl. 378.—BREWER, ed. Wilson's Am. Orn., 1840, 686.—DE KAY, Zool. N. Y., ii, 1844, pl. 9, fig. 19.—THOMPSON, Nat. Hist. Vermont, 1853, 64.
- Surnia funerea* BONAPARTE, Geog. and Comp. List, 1838, 6.—AUDUBON, Synopsis, 1839, 21; Birds Am., oct. ed., i, 1840, 112, pl. 27.—NEWTON, ed. Yarrell's Hist. Brit. Birds, i, 1837, 183.—HARTING, Handb. Brit. Birds, 1872, 91.—SHARPE and DRESSER, Birds Europe, v, pt. xii, 1872, 309, pl. 312.—HURDIS, Jardine's Contr. Orn., 1850, 37 (Bermudas).—HOY, Proc. Ac. Nat. Sci. Phila., vi, 1853, 306 (Racine, Wisconsin).—KENNICOTT, Trans. Ills. Agric. Assoc., i, 1855, 581 (n. Illinois).—DEGLAND and GERBE, Orn. Europ., i, 1867, 117.—DALGLEISH, Bull. Nutt. Orn. Club, v, 1880, 74 (3 British records).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 192; Nom. N. Am. Birds, 1881, no. 407.—MERRIAM, Bull. Nutt. Orn. Club, vi, 1881, 232 (Lewis Co., New York, rare).—COUES, Check List, 2d ed., 1882, no. 480.—MCLENEGAN, Cruise "Corwin," 1884, 118 (Kowak R., Alaska; habits).—BREWSTER, Auk, ii, 1885, 109 (n. Maine and n. New Hampshire, numerous in Oct. and Nov., 1884).—BROWNE, Auk, ii, 1885, 220 (Framingham, Massachusetts, Jan., 1860).—GURNEY, Cat. Birds of Prey, 1894, 40.
- S[surnia] funerea* KEYSERLING and BLASIUS, Wirb. Eur., 1840, pp. xxxii, 144.—COUES, Key N. Am. Birds, 2d ed., 1884, 511.
- Swinia* [typog. error] *funerea* NELSON, Cruise "Corwin" in 1881 (1883), 77 (coasts of Bering Sea and Kotzebue Sound, Alaska).
- [*Surnia ulula*.] Subsp.  $\alpha$ . *Surnia funerea* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 131 (Repulse Bay; Ft. Simpson; w. side Rocky Mts.; Scotland).
- Surnia ulula funerea* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 8.
- Surnia funerea funerea* OBERHOLSER, Proc. Biol. Soc. Wash., xix, Feb. 26, 1906, 43.
- Syrnia funerea* MACGILLIVRAY, Hist. Brit. Birds, iii, 1840, 404.
- Noctua funerea* YARRELL, Brit. Birds, i, 1843, 139.
- Ulula funerea* SCHLEGEL, Mus. Pays-Bas, ii, no. 36 (Revue), 1873, 18.
- [*Nycthierax*] *funereus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 247.
- Strix caparoch* MÜLLER, Syst. Nat. Suppl., 1776, 69 (Hudson Bay; based on Edwards, Nat. Hist., ii, 62, pl. 62, and *Caparoch* Buffon, Hist. Nat. Ois., i, 306).
- Surnia ulula caparoch* STEJNEGER, Auk, i, Oct., 1884, 363.—ALLEN, Auk, ii, 1885, 383 (Chatham, Massachusetts, winter 1883-84).—TURNER, Proc. U. S. Nat. Mus., viii, 1885, 243 (Ft. Chimo, Ungava, breeding); Contr. Nat. Hist. Alaska, 1886, 164 (descr.; habits).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 377a; 3rd ed., 1910, 177.—BUTLER, Bull. Brookville Soc. N. H., no. 2, 1886, 25 (Franklin Co., Indiana, 1 spec., Jan.).—RALPH and BAGG, Trans. Oneida Hist. Soc., iii, 1886, 122 (Clark's Mills, Oneida Co., New York, 1 spec., winter 1885).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 155 (whole of wooded districts; descr. nest and eggs, etc.).—COOKE, Bird Migr. Miss. Val., 1888, 123, part (Elk R., Minn., Oct.; Mt. Carmel, Missouri, Dec. 26–March 10; Wisconsin; n. Illinois, 1 spec.).—BREWSTER, Auk, v, 1888, 390 (Winchenden, Massachusetts, 4 specs., winter 1886-87 and 1887-88).—RIDGWAY, Orn. Illinois, i, 1889, 424.—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 546 (Manitoba, irregular winter visitant;



- habits).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 393, pl. 12, fig. 18 (egg).—RHODES, Proc. Ac. Nat. Sci. Phila., 1893, 41 (Vancouver I. and Vernon, Brit. Columbia).—DUTCHER, Auk, x, 1893, 275 (Bay Ridge, Long Island, no date); xii, 1895, 181 (Ogdensburg, St. Lawrence Co., New York).—STONE, Birds E. Penn. and N. J., 1894, 92 (e. Pennsylvania and New Jersey records).—POSSON, Auk, xvi, 1899, 195 (near Holley, Orleans Co., New York; no date).—HOWE, Auk, xix, 1902, 80 (Massachusetts); xxv, 1908, 84 (Lincoln, Massachusetts, Feb., 1907).—CHAPMAN, Bull. Am. Mus. N. H., xvi, 1902, 239 (Kenai Mts., Alaska, Aug., Sept.).—TAVERNER, Auk, xxiii, 1906, 108 (Port Huron, St. Clair Co., Michigan, Nov. 19, 1905).—FLEMING, Auk, xxiv, 1907, 75 (Toronto, Ontario, rare winter migrant).—EIFRIG, Auk, xxiv, 1907, 110 (Ottawa, Ontario, Oct. 9, 1906).—ROBERTS, in Wilcox's Hist. Becker Co., Minn., 1907, 174 (winter visitant).—DEANE, Auk, xxiv, 1907, 219 (West Greenwich, Rhode Island, Nov. 16, 1906).—ALLEN (G. M.), Auk, xxv, 1908, 235 (Van Buren, Aroostook Co., Maine, April 16, 1906).—EDSON, Auk, xxv, 1908, 433 (Bellingham Bay, Washington, 1 spec.).—KERMODE, Provincial Mus. Victoria, 1909, 47 (Victoria, Sardis, Grand Prairie, Vernon, and Okanogan, Brit. Columbia).—SWALES, Auk, xxvii, 1910, 454 (Port Huron, St. Clair Co., Michigan, Nov. 19, 1905, Nov. 6, 1906).
- S[urnia] ulula caparoch* RIDGWAY, Man. N. Am. Birds, 1887, 265.
- Surnia funerea caparoch* OBERHOLSER, Proc. Biol. Soc. Wash., xix, Feb. 26, 1906, 43.
- [*Surnia*] *caparoch* SHARPE, Hand-list, i, 1899, 296.
- [*Strix*] *hudsonia* GMELIN, Syst. Nat., i, pt. 1, 1788, 295 (Hudson Bay; based on *Le chathuant de la Baye de Hudson*, *Strix freti-hudsonis* Brisson, Orn., i, 520).
- Strix hudsonia* WILSON, Am. Orn., vi, 1812, 64, pl. 50, fig. 6 (near Philadelphia; spec. in coll. Peale Mus.).—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 19.
- Surnia hudsonia* JAMESON, ed. Wilson's Am. Orn., i, 1831, 90.
- Surnia ulula*, var. *hudsonia* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 75.—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 217 (Bermudas?; 1 spec.; doubtful).
- Surnia ulula* . . . var. *hudsonia* RIDGWAY, Ann. Lyc. N. Y., x, 1874, 375 (n. e. Illinois).
- Surnia ulula hudsonia* HARTLAUB, Journ. für Orn., 1883, 265 (Alaska).
- Surnia ulula* var. *hudsonia* COUES, Birds Northwest, 1874, 311 (excl. synonymy under "*a. ulula*").
- [*Surnia ulula* var. *hudsonia*] b. *hudsonia* COUES, Birds Northwest, 1874, 311 (synonymy).
- S[trix] hudsonica* BONAPARTE, Journ. Ac. Nat. Sci. Phila., iii, pt. ii, 1824, 354; Obs. Wilson's Am. Orn., 1826, [15].
- [*Surnia*] *ulula* var. *hudsonica* COUES, Key N. Am. Birds, 1872, 205.
- Surnia ulula* . . . var. *hudsonica* COUES, Check List, 1873, no. 326.
- Surnia ulula* var. *hudsonica* MERRIAM, Bull. Nutt. Orn. Club, iii, 1878, 54 (Lewis Co., New York, Oct. 24 and Nov. 16, 1877).
- S[urnia] ulula* var. *hudsonica* NELSON, Bull. Essex Inst., viii, 1876, 117 (Kane Co., Illinois, Sept., 1869, 1 spec.).
- [*Strix*] *funerea* β. LATHAM, Index Orn., i, 1790, 62 (Hudson Straits; based on *Strix freti hudsonis* Brisson, Orn., i, 520, no. 7, etc.).
- Surnia canadensis* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1826, 62 (based on *Le Chathuant de Canada* Brisson, Orn., i, 518, pl. 37, fig. 2).
- Stryx doliata* PALLAS, Zoogr. Rosso-Asiat., ii, 1826, 316, part, in synonymy (cites *Strix freti-hudsonis* Brisson and *Caparoch americanorum* Buffon).
- Surnia borealis* LESSON, Traité d'Orn., 1831, 100, part (northern North America; Newfoundland).

- [*Surnia*] *ulula* (not *Strix ulula* Linnæus) BONAPARTE, Conspect. Av., i, 1850, 36, part.—GRAY, Hand-list, i, 1869, 39, no. 376, part.
- Surnia ulula* CABOT, Naumannia, 1852, heft iii, 66 (Lake Superior).—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 191 (excl. syn. part); in Baird, Rep. Pacific R. R. Surv., ix, 1858, 64 (excl. syn. part).—BREWER, N. Am. Oology, i, 1857, 80; Proc. Bost. Soc. N. H., xix, 1878, 306 (Houlton, Maine, fall of 1877).—BAIRD, Cat. N. Am. Birds, 1859, no. 62.—WHEATON, Ohio Agric. Rep., 1860, no. 29 (Ohio in winter).—BOARDMAN, Proc. Bost. Soc. N. H., ix, 1862, 123 (Calais, Maine, breeding).—VERRILL, Proc. Essex Inst., iii, 1862, 143 (Oxford Co., Maine, Nov.-March).—LORD, Proc. Roy. Artill. Inst. Woolwich, iv, pt. iii, 1864, 111 (Brit. Columbia).—MCILWRAITH, Proc. Essex Inst., v, 1866, 281 (Hamilton, Ontario).—LAWRENCE, Ann. Lyc. N. Y., viii, 1866, 281 (vicinity of New York City).—TURNBULL, Birds E. Penn. and N. J., 1869, 41 (New Jersey).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 274, part (Nulato and Sitka, Alaska; habits; descr. nest and eggs).—COOPER, Orn. Calif., 1870, 448 (no California record).—MERRIAM, Sixth An. Rep. U. S. Geol. Surv. Terr., 1873, 696 (Madison R., Montana, Aug. 11).—(?) RIDGWAY, Bull. Nutt. Orn. Club., iii, 1878, 38 (St. Michaels, Alaska).—(?) AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 377.—(?) TURNER, Contr. Nat. Hist. Alaska, 1886, 163 (s. e. base of Shaman Mt. and St. Michaels, Alaska; not pl. 6, which is true *S. ulula*!).—(?) NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 154 (St. Michaels; crit.).—(?) BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 392, part.
- (?) *Surnia ulula ulula* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 176.
- (?) *Surnia funerea ulula* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 192; Nom. N. Am. Birds, 1881, no. 407a.—COUES, Check List, 2d ed., 1882, no. 481.—NELSON, Cruise of "Corwin" in 1881 (1883), 77 (St. Michaels, Alaska).
- Strix nisoria* (not of Meyer) SCHALOW, Journ. für Orn., 1891, 249 (Alaska).

### Genus GLAUCIDIUM Boie.

- Glaucidium* BOIE, Isis, xix, 1826, 970. (Type, by monotypy, *Strix passerina* Linnæus.)
- Nyctipetes* SWAINSON, Classif. Birds, ii, 1837, 218. (Type, *Strix perlata* Vieillot.)
- Tænioptynx* KAUP, Isis, 1848, 768. (Type, *Noctua brodiei* Burton.)
- Tænioglaux* KAUP, Isis, 1848, 769. (Type, *Strix radiata* Tickell.)
- Microglaux* KAUP, Isis, 1848, 769. (Type, as fixed by Gray, 1855, *Strix perlata* Vieillot.)
- Microptynx* KAUP, Isis, 1848, 764; Jardine's Contr. Orn., 1852, 106. (Type, *Strix passerina* Linnæus.)
- (?) *Smithiglaux* BONAPARTE, Rev. et Mag. Zool., 1854, vi, (2), 544. (Type, *Athene capensis* Smith.)
- Phalænopsis* BONAPARTE, Rev. et Mag. Zool., vi (2), 1854, 544. (Type, *Strix nana* King.)

Very small Bubonidæ (wing about 84-117 mm.) with the small circular nostril opening near center of the inflated cere, head without ear-tufts, tarsi (sometimes toes also) densely feathered, and tail about two-thirds to three-fourths as long as wing, with twelve rectrices.

Bill stout; cere on top less than half as long as chord of culmen, very broad. Nostril small, circular, opening near center of the inflated (semibulbous) cere. External ear-openings small, symmet-

rical, regularly obliquely oval, much shorter than diameter of eye, without marginal flap or transverse ligament. Wing moderate, with longest primaries decidedly exceeding longest secondaries; sixth, seventh, and eighth, seventh and eighth, or sixth and seventh<sup>a</sup> primaries longest, the tenth (apparent outermost) not longer (usually shorter) than distal secondaries; four outer primaries with inner webs emarginated or sinuated. Tail a little less than two-thirds to slightly more than three-fourths as long as wing, moderately or slightly rounded or (sometimes, at least, in *G. siju*) slightly double-rounded; rectrices twelve. Legs and feet very strong, the tarsus about as long as middle toe without claw, densely clothed, all round, with soft hairlike feathers, the upper surface of toes bristled (feathered basally in *G. passerinum*).

*Coloration* (of American and European species).—Above brown or rufous (sometimes more or less barred or spotted), interrupted by a more or less distinct collar across lower hindneck of whitish or rusty usually with more or less distinct indications of an interrupted blackish one immediately below; tail barred (the bars sometimes obsolete in rufous phases); under parts white, usually immaculate medially but laterally striped, spotted or otherwise marked with brown, rufous, or blackish.

*Range*.—Europe (one species), Africa, southern Asia, South and Central America, Mexico, and western United States north to British Columbia; one species in Cuba. (About 30 species, including subspecies.)

#### KEY TO THE SPECIES AND SUBSPECIES OF GLAUCIDIUM.

- a. Nostrils opening near center of cere; sides and flanks longitudinally striped. (*Glaucidium*.)
  - b. Pileum spotted or dotted in adults.
    - c. Back more or less spotted or barred, at least beneath surface; sides of breast more or less spotted or barred; tail with five to eight white or cinnamon-rufous bands.
    - d. Fourth and fifth primaries (counting from outside) longest; tips of outer primaries broad; tail with only five white bands or less (in rufous phase both tail and remiges broadly banded with cinnamon-rufous); general coloration much darker, with spots on pileum larger, and those on scapulars more transverse. (Costa Rica to Venezuela and Peru.)
      - Glaucidium jardinii* (p. 782).**
    - dd. Fourth primary longest, the third usually longer than fifth; tips of outer primaries narrow; tail with six to eight white or whitish bands; general coloration much lighter, with spots on pileum smaller and those on scapulars less transverse.
    - e. Stripes on under parts dark brown or blackish, relatively narrower; larger, with relatively longer tail (tail not less than 57 mm.); feathering of tarsus longer, extending more over base of toes. (*Glaucidium gnoma*.)

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<sup>a</sup> Third, fourth, and fifth, third and fourth, or fourth and fifth from outside, not counting the rudimentary eleventh (first) primary.



f. Color of back, etc., decidedly grayish brown (grayish hair brown to bistre or grayish snuff brown).

g. Smaller (wing averaging less than 88 in male, less than 94 in female).

h. Tail longer (averaging 63 in male, 61.5 in female); brown throat-band less distinct (?). (Southern Lower California.)

**Glaucidium gnoma hoskinsii** (p. 788).

hh. Tail shorter (averaging 59.2 in male, 59.4 in female); brown throat-band more distinct (?). (Northern and central Mexico.)

**Glaucidium gnoma** (p. 785).

gg. Larger (wing averaging 90 or more in males, more than 95 in females).

h. Color of upper parts grayer (back, etc., grayish hair brown); larger (wing averaging 95.4 in male, 101.2 in female). (Rocky Mountains of United States, from Arizona and New Mexico to Montana.)

**Glaucidium gnoma pinicola** (p. 789).

hh. Color of upper parts browner (back, etc., broccoli brown to light bistre or grayish snuff brown); smaller (wing averaging 93.6 in male, 95.7 in female). (California, except northern coast district, and northward to interior of British Columbia.)

**Glaucidium gnoma californicum** (p. 790).

ff. Color of back, etc., decidedly brown to deep brown or rufescent brown.

g. Color of upper parts lighter and more rufescent brown (back, etc., snuff brown to verona brown).

h. Smaller (wing averaging 87.4 in male, 93.7 in female). (Mexico.)

**Glaucidium gnoma gnoma**, rufescent phase (p. 786).

hh. Larger (wing averaging 93 in male, 95.6 in female). (Coast district, from San Francisco Bay to southern British Columbia.)

**Glaucidium gnoma grinnelli** (p. 791).

gg. Color of upper parts darker and more sooty brown (back, etc., dark bistre to warm sepia). (Wing averaging 90 in male, 93.7 in female.) (Vancouver Island, British Columbia.)

**Glaucidium gnoma swarthi** (p. 793).

ee. Stripes on under parts light brown, relatively broader; smaller, with relatively shorter tail (tail 54 in male, 55 in female); feathering of tarsus shorter, ending abruptly above base of toes. (Southwestern Mexico, in State of Guerrero and Territory of Tepic.)

**Glaucidium palmarum** (p. 793).

cc. Back neither spotted nor barred (uniform brown); sides of breast plain brown; tail with only four transverse series of white spots. (*Glaucidium pumilum*.)

d. General coloration more rufescent, especially stripes on under parts. (Southern Brazil to British Guiana.)

**Glaucidium pumilum pumilum** (extralimital).<sup>a</sup>

dd. General color less rufescent. (Panama to Guatemala.)

**Glaucidium pumilum griseiceps** (p. 795).

<sup>a</sup> *Strix pumila* Lichtenstein, Verz. Säugeth. Vög. K. Univ. Berlin, 1818, 28 (Brazil; no descr., but cites "*Caburé Azara Chouette* LeVaill[ant]"); Temminck, Planch. Col., ii, livr. 7, Feb., 1821, pl. 39 and text (Paraguay; Brazil).—"L" ie. *S[trix] pumila* Lichtenstein, Verz. Doubl., 1823, 60 (Bahia and São Paulo, Brazil; description; coll. Berlin Mus.).—*Noctua pumila* Stephens, Shaw's Gen. Zool., xiii, pt. 2, 1826, 68.—*A[thene] pumila* Gray, Gen. Birds, i, 1845, 35.—*Glaucidium pumilum* Kaup, Jardine's Contr. Orn., 1852, 103 (monogr.).—*Glaucidium pumilum* Kaup, Trans. Zool. Soc. Lond., iv, 1859, 202 (monogr.; habits); Burmeister, Syst. Ueb. Th. Bras., ii, 1856, 144; Ridgway, Proc. Bost. Soc. N. H., xvi, 1873, 97, part (monogr.); Ibis, 1876, 16, part (crit.); Sharpe, Ibis, 1875, 40, 56, pl. 2, fig. 1 (monogr.); Cat. Birds Brit. Mus., ii, 1875, 198; Salvin, Ibis, 1886, 72 (Camacusa, Brit. Guiana); Allen, Bull. Am. Mus. N. H., ii, 1889, 266 (as to type of *Strix minutissima* Maximilian).—*Glauci-*

**bb. Pileum streaked (not spotted) in adults.**

- c. Smaller (wing 86, tail 57, in female); under parts streaked with blackish brown or brownish black; general color much darker (pileum deep grayish brown, back, etc., deep warm-sepia brown). (Eastern Mexico, in State of Puebla.)

***Glaucidium fisheri* (p. 797).**

- cc. Larger (wing averaging more than 97, tail averaging more than 62, in female); under parts streaked with light brown to cinnamon-rufous; general color much paler (pileum and back light grayish brown to cinnamon-rufous). (*Glaucidium brasilianum*.)

- d. Averaging deeper in color, especially the rufous phase. (Brazil and other parts of South America.)

***Glaucidium brasilianum brasilianum* (extralimital).<sup>a</sup>**

- dd. Averaging paler, especially the rufous phase. (Panama to southwestern border of United States.) ..... ***Glaucidium brasilianum ridgwayi* (p. 798).**

- aa. Nostrils opening in anterior edge of cere; sides and flanks transversely spotted. (——?) (*Glaucidium siju*.)

- b. Smaller (wing averaging 91.4 in male, 99.6 in female; tail averaging 56.4 in male, 63.4 in female); coloration browner, less conspicuously barred. (Cuba.)

***Glaucidium siju siju* (p. 804).**

- bb. Larger (wing 94.5 in male, averaging 105 in female; tail 61.5 in male, averaging 70.5 in female); coloration grayer, more conspicuously barred. (Isle of Pines.)

***Glaucidium siju vittatum* (p. 805).**

### **GLAUCIDIUM JARDINII (Bonaparte).**

#### **JARDINE'S PYGMY OWL.**

##### *Brown phase.*

**Adults (sexes alike).**—General color of upper parts deep brown (deep bone brown to deep mummy brown or deep vandyke brown), deepest

#### Footnote—Continued.

*dium*] *pumilum* Cabanis, Journ. für Orn., 1869, 208 (crit.).—*Strix*] *minutissima* Maximilian, Beitr. Naturg. Bras., iii, pt. i, 1830, 242 (int. of Province of Bahia, Brazil; types now in coll. Am. Mus. N. H.).—*Athene*] *minutissima* Bonaparte, Consp. Av., i, 1850, 38; Pelzeln, Orn. Bras., 1871, 399.—*Athene minutissima* Pelzeln, Orn. Bras., 1868, 9; iv, 1871, 463; Ibis, 1875, 330 (Spanish Guiana).—*Noctua minutissima* Schlegel, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 22; no. 36 (Revue), 1873, 29.

<sup>a</sup> [*Strix*] *brasiliensis* Gmelin, Syst. Nat., i, pt. 1, 1788, 289 (Brazil; based on *Asio brasiliensis* Brisson, Orn., 145, this based on *Cabure ou Caboure* Willughby, Orn., 107, etc.; see Berlepsch, Bull. Brit. Orn. Club, xii, 1901, 8, 9).—*Glaucidium*] *brasiliense* Berlepsch, Bull. Brit. Orn. Club, xii, no. lxxxii, Oct. 30, 1901, 9, in text.—*Strix ferox* Vieillot, Nouv. Dict. d'Hist. Nat., vii, 1817, 22 (Paraguay; based on *Caburé* Azara, Apunt. Parag., i, 225).—*Noctua ferox* D'Orbigny, Voy. Amer. Mérid., Ois., 127.—*[Glaucidium ferox.]* Subsp. *α. Glaucidium ferox* Sharpe, Cat. Birds Brit. Mus., ii, 1875, 200.—*Strix passerinoides* Temminck, Planch. Col., ii, livr. 58, May, 1825, pl. 344, and text (Brazil; coll. Paris Mus.).—*Noctua passerinoides* Lesson, Man. d'Orn., i, 1828, 112.—*A[thene] passerinoides* Gray, Gen. Birds, i, 1845, 35.—*Glaucidium passerinoides* Burmeister, Syst. Ueb. Th. Bras., ii, 1856, 143.—*Strix infuscata* Temminck, Man. d'Orn., ed. 2, pt. i, 1821, 97, in text (Brazil; based on *Cabouré* Azara).—*[Athene] infuscata* Bonaparte, Consp. Av., i, 1850, 37; Strickland, Orn. Syn., 1855, 163.—*Gl[au]cidium infuscatum* Kaup, Jardine's Contr. Orn., 1852, 103.—*[Phalænopsis] infuscata* Bonaparte, Rev. et Mag. de Zool., 1854, 544.—*Glaucidium infuscatum*, var. *infuscatum* Ridgway, Proc. Bost. Soc. N. H., xvi, 1873, 102.—*Noctua infuscata* Schlegel, Mus. Pays-Bas., Striges, 1862, 31.—*Strix ferruginea* Maximilian, Reise Bras., i, 1820, 105, footnote (Cabo Trio to Villa de São Salvador, Brazil; types now in coll. Am. Mus. N. H.).

or most saturated on back; pileum and hindneck with numerous small rounded or guttate spots of dull white to pale rusty; across the lower hindneck a broken collar of mixed black and white, this margined posteriorly by more or less of buffy to pale tawny or cinnamon-rufous; back nearly if not quite immaculate on surface, but with concealed small spots or bars of buffy or pale tawny-buff, the rump similarly marked but with spots or bars more exposed; upper tail-coverts with transverse spots or bars of white, mostly concealed; tail brownish black or blackish brown, crossed by six to seven narrow bands of white, these falling far short of shafts on both webs; outer webs of scapulars more or less barred or transversely spotted with dull white to pale tawny; wing-coverts more or less spotted or barred (irregularly) with dull whitish, buffy, or pale tawny; secondaries crossed by four or five transverse series of dull brownish buffy or dull pale tawny spots (on edges), those on proximal secondaries becoming more brownish and much less distinct inwardly, those on distal secondaries more sharply defined and confined to edge; primaries dusky brown with more or less distinct spots of lighter brown on outer webs, those on distal portion of longer primaries much more distinct and paler (dull white to buffy); "eyebrow" (superciliary region) and lores dull white, the shafts of the bristly loreal feathers blackish; auricular and suborbital regions barred with dusky brown and pale fulvous or dull buffy; malar region and chin immaculate white; across middle of throat a conspicuous broad band varying in color from uniform blackish brown to lighter brown and buffy or pale tawny (the latter mostly on tips of feathers), this dark band extending laterally, on each side, to sides of neck; a conspicuous white patch covering upper chest and median portion of foreneck, usually confluent posteriorly with a white (usually immaculate) median stripe on breast and abdomen; sides of breast, sides, and flanks brown (mummy brown, argus brown, natal brown, or roods brown),<sup>a</sup> broken by transverse spots or irregular bars of dull whitish or buffy to pale rusty, sometimes with blackish transverse spots or bars also, especially on flanks, the inner portion of these brownish lateral areas (next to the white median area) broadly streaked with black; legs dull brownish white to pale rusty brown, heavily mottled with brown; under tail-coverts white, the longer ones with blackish mesial streaks on distal portion; under wing-coverts buffy white, those near edge of wing streaked with dusky brown, the streaks sometimes coalesced and forming a stripe running parallel with the edge; under surface of remiges grayish brown transversely spotted with white, except on distal portion of longer and outermost primaries; bill pale dull yellowish; iris bright lemon yellow; naked portion of toes dull yellowish gray (in dried skins).

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<sup>a</sup> Of "Color Standards and Color Nomenclature" (1912).



*Rufous phase.*

*Adults (sexes alike).*—Above deep cinnamon-rufous or hazel, darkest on back and scapulars; pileum and hindneck spotted with lighter cinnamon-rufous; lower hindneck crossed by a collar of black (more or less interrupted in middle portion), immediately below which the color is lighter cinnamon-rufous or rufous-tawny; back, rump, scapulars, and wing-coverts indistinctly barred or transversely spotted with lighter cinnamon-rufous, but sometimes nearly immaculate, especially the scapulars; tail banded with light cinnamon-rufous and dusky, the bands varying in relative width, the paler ones sometimes continuous but sometimes interrupted at shafts of rectrices; whole face light cinnamon-rufous, rarely approaching dull rusty white on "eyebrow" and lores; chin and malar region white (usually tinged, more or less, with rusty); band across throat deep cinnamon-rufous, usually more or less intermixed with black laterally; upper chest, median foreneck, and median line (sometimes very narrow) of breast and abdomen white; sides of breast, and sides, uniform cinnamon-rufous, the flanks similar but broken into more or less distinct stripes of cinnamon-rufous and white or buffy white, the latter, however, sometimes indistinct; thighs, tarsi, and under tail-coverts tawny-ochraceous, the last indistinctly edged with whitish; under wing-coverts and spots on inner webs of remiges ochraceous-buffy; bill, etc., as in brown phase.

*Young.*—Essentially like adults, but pileum, hindneck, and back unspotted.

*Adult male.*—Length (skin), 150;<sup>a</sup> wing, 89–95.5 (92.1); tail, 49.5–63.5 (56.5); culmen (from cere), 11.5–12.2 (11.8).<sup>b</sup>

<sup>a</sup> One specimen.

<sup>b</sup> Two specimens; one (the smaller) from Soná, Panamá; the other from mountains south of Cartago, Costa Rica.

Eight specimens of undetermined sex measure as follows: Length (skins), 145–165 (153.1); wing, 95–104.5 (99.1); tail, 53–64.5 (58.6); culmen (from cere), 10.5–11.5 (10.9).

Locality.	Wing.	Tail.	Culmen, from cere.
SEX UNKNOWN.			
Three adults from Costa Rica.....	96	53.3	11.2
Three adults from Colombia.....	102.2	65.2	10.7
One adult said to be from Guiana.....	97.5	56.5	10.5
One adult labeled "Brazil?".....	100.5	57	11

The very considerable variation in pattern and colors in the series examined indicates the possibility of geographic differentiation, but the number of specimens is much too small to warrant any conclusion in the matter.

Highlands of Costa Rica (mountains south of Cartago, at 10,000 feet; Cartago; Volcán de Irazú; Volcán de Turrialba; Rancho Redondo) and southward through Panamá (Soná) and Colombia (Bogotá; Santa Elena, Antioquia) to Venezuela (Caracas; Angostura), Ecuador (Quito; San Rafael; La Concepción), and Peru (Maraynioc; Pariayacu; Culumachay); <sup>a</sup> Guiana?

*Phalænopsis jardinii* BONAPARTE, Compt. Rend., xli, 1855, 654 (Andes of Quito, Ecuador).

*G[laucidium] jardinii* CABANIS, Journ. für Orn., 1869, 208 (crit.).

*Glaucidium jardinii?* RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 92, 99 (monogr.; Bogota, Colombia; "Guiana").

*Glaucidium jardinii* RIDGWAY, Ibis, 1876, 11, 12, 14, pl. 1 (crit.).—SHARPE, Ibis, 1875, 43, 57 (crit.; geog. range: Antioquia and Bogota, Colombia; Venezuela); Cat. Birds Brit. Mus., ii, 1875, 207.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 539 (Santa Elena, Antioquia, Colombia).—BERLEPSCH, Ibis, 1884, 436 (Angostura, Venezuela; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 36 (Cartago, Rancho Redondo, and Volcan de Irazú, Costa Rica; Colombia; Venezuela; Ecuador).—GOODFELLOW, Ibis, 1902, 221 (Quito, Ecuador; habits).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 478 (Volcan de Turrialba and Volcan de Irazu, Costa Rica; crit.; habits).

[*Glaucidium*] *jardinii* SHARPE, Hand-list, i, 1899, 298.

*Glaucidium jardinei* RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 415 (Costa Rica).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 109 (San Rafael, Ecuador; descr. male and female).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 33 (La Concepcion, centr. Ecuador; crit.).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, ii, 41 (Maraynioc, Pariayacu, and Culumachay, centr. Peru; crit.).

*Glaucidium jardini* ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 125 (Cartago, Costa Rica).

*Noctua jardinii* SCHLEGEL, Mus. Pays-Bas, ii, no. 36 (Revue), 1873, 29.

*G[laucidium] lansbergii* RIDGWAY, Proc. Bost. Soc. N. H., xvi, Dec., 1873, 92 ("Brazil"; descr.).

*Glaucidium lansbergii* RIDGWAY, Proc. Bost. Soc. N. H., xvi, Dec., 1873, 98 (Caracas, Venezuela; coll. Ac. Nat. Sci. Phila.; ex T. B. Wilson, manuscript; =rufous phase).

### GLAUCIDIUM GNOMA GNOMA Wagler.

#### PYGMY OWL.

#### Grayish brown phase.

*Adults (sexes alike).*—General color of upper parts grayish brown (deep hair brown to bister or, sometimes, nearly clove brown),<sup>b</sup> the pileum and hindneck with numerous irregular but mostly roundish small spots of pale dull buff or buffy white; across lower hindneck an interrupted collar of white and immediately below this another of

<sup>a</sup> I have not seen specimens from Peru or Ecuador.

<sup>b</sup> The variation depending mostly on age of the plumage, those in new dress being darker, those in worn plumage paler and browner.

black (most developed laterally) followed by large, mostly concealed, spots of pale tawny or pale cinnamon-buffy; back, innermost scapulars, wing-coverts, rump, and upper tail-coverts with a greater or less number of minute irregular (often V-shaped) spots or bars of pale buffy brownish, buffy, or whitish, these markings mostly concealed; exterior scapulars with large spots of buffy or buffy white on both webs, the spots largest, however, on outer webs; outermost middle and greater wing-coverts with larger spots of white; primary coverts plain dark brown, darker terminally, their inner webs, however, spotted with white; remiges dusky grayish brown, their outer webs with transverse spots or broad bars of paler grayish brown, these becoming white or partly white on distal secondaries and distal portion of longer primaries; tail dark to dusky grayish brown, crossed by six or seven interrupted bars of white, these much broader on inner webs, and on both webs falling far short of the shaft; "eyebrow" and lores dull white, the latter with conspicuous black bristly shafts; chin and malar region immaculate white; a band of brown across throat, this in middle portion lighter and more or less barred or flecked with paler, darker and nearly (sometimes quite) immaculate laterally (behind white subauricular area); foreneck and median line of breast and abdomen immaculate white; sides of chest brown, more or less tinged with tawny, transversely spotted with pale cinnamon-buff, the sides more grayish, irregularly spotted with white; rest of under parts white broadly streaked with dark brown, the streaks becoming black or brownish black on flanks and next to the immaculate white median area; under wing-coverts buffy white to very pale buff, with a line of black streaks on outer side, parallel with edge of wing; under primary coverts pale buff or buffy white, broadly tipped with black; under surface (inner webs) of remiges banded with pale buff or buffy white and grayish brown, the pale bands narrower than the darker ones on outer primaries, but much broader on secondaries; legs soiled dull white (becoming more brownish on thighs), more or less mottled with grayish brown; bill pale grayish yellow, darker basally (in dried skins); iris lemon yellow; toes light yellowish brown (in dried skins).

*Rufescent phase.<sup>a</sup>*

*Adults (sexes alike).*—Similar in pattern of coloration to the grayish brown phase, but general color of upper parts much browner (bister or deep snuff brown to verona brown) with the spotting (especially

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<sup>a</sup> This rufescent phase seems to occur mainly if not exclusively in the extreme southern and eastern parts of the range; at least the only examples I have seen are those from Michoacan and one each from Galindo, Tamaulipas, and an unknown locality in Nuevo Leon, there being also grayish brown specimens from the last two but none from the first. The only specimen seen from the State of Morelos is in the grayish brown plumage.



that on pileum and hindneck) cinnamon or cinnamon-buff, and with throat-band and sides of breast cinnamon-brown.

*Young*.—Similar to adults, but pileum plain brownish gray (only the anterior portion of forehead more or less spotted or flecked with paler), in marked contrast with browner color of back; brown on sides of breast unspotted, and texture of plumage softer.

*Adult male*.—Length (skins), 146–162 (152); wing, 82–92 (87.4); tail, 57–63 (59.2); culmen (from cere), 9.5–10.5 (10.1).<sup>a</sup>

*Adult female*.—Length (skins), 153–162 (159); wing, 89.5–98 (93.7); tail, 58–63.5 (59.4); culmen (from cere), 10–10.5 (10.4).<sup>b</sup>

Highlands of northern and central Mexico, in States of Chihuahua (Colonia Garcia), Nuevo León, Tamaulipas (Galindo), Jalisco (Las Peñas; La Laja, 9,000 feet; Volcán de Nieve; Guadalajara), Colima (Sierra Nevada), Michoacán (Mt. Tancitaro; Patambán), Morelos (Huitzilác), Mexico (City of Mexico; Tenango del Valle; Chimalpa), and Guerrero (Vente de Zopilote; Omilteme), and Territory of Tepic (Sierra Madre); also, highlands of Chiapas (Comitán) and Guatemala (Cobán; Choctúm; Dueñas; Volcán de Fuego)?<sup>c</sup>

*Glaucidium gnoma* WAGLER, Isis, 1832, 275 (Mexico; coll. Württemberg Mus.).—

KAUP, Jardine's Contr. Orn., 1852, 103 (under *G. infuscatum*).—SHARPE, Ibis, 1875, 38, pl. 1, part (City of Mexico; w. Mexico; Choctum, Guatemala; monogr.; crit.), 56, part (geog. range); Cat. Birds Brit. Mus., ii, 1875, 194, part (w. Mexico; Central America (?).—RIDGWAY, Ibis, 1876, part (Mexico; Guatemala; crit.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 379, part (Mexico).—SALVIN and GODMAN, Biol.

<sup>a</sup> Nine specimens.

<sup>b</sup> Five specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
<b>MALES.</b>			
Three adult males from Michoacán.....	86	59.5	9.8
One adult male from Jalisco.....	86.5	58.5	10.5
One adult male from Chihuahua (Colonia Garcia).....	89	59.5	10.5
One adult male from Nuevo Leon.....	84.5	58	9.5
Two adult males from Tamaulipas (Galindo).....	90	61.5	10
One adult male from "Mexico".....	89	57	10.5
<b>FEMALES.</b>			
One adult female from Morelos (Huitzilac).....	89.5	59	10
Two adult females from Jalisco.....	94.5	61	10.5
One adult female from Nuevo Leon.....	90.5	58	10.5
One adult female from Tamaulipas (Galindo).....	89.5	58	10.5

<sup>c</sup> I have not seen specimens from either Chiapas or Guatemala, which probably represent a different form, separated geographically from *G. g. gnoma* by the intervening lowlands of eastern Oaxaca (Isthmus of Tehuantepec). According to Salvin and Godman (Biol. Centr.-Am., Aves, iii, p. 36) there are color differences, the value of which, however, is minimized by the authors cited.

Centr.-Am., Aves, iii, 1897, 35, part *a* (Las Peñas, Jalisco; Sierra Madre, Tepic; Tenango del Valle and Chimalpa, Mexico; Chimalpa, Vera Cruz; Puebla; Vente de Zopilote and Omilteme, Guerrero; Comitán, Chiapas; Cobán, Choctum, Dueñas, and Volcan de Fuego, Guatemala).

[*Glaucidium*] *gnoma* SHARPE, Hand-list, i, 1899, 298, part (Mexico).

*G[laucidium] gnoma* CABANIS, Journ. für Orn., 1869, 207 (crit.).—COUES, Key N. Am. Birds, 2d ed., 1884, 514, part (Mexico).—RIDGWAY, Man. N. Am. Birds, 1887, 266, part (Mexico; Guatemala).

*G[laucidium] gnoma gnoma* NELSON, Proc. Biol. Soc. Wash., xxiii, June 24, 1910, 104 (measurements).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 178, part (Guatemala).

*Glaucidium gnoma gnoma* PHILLIPS, Auk, xxviii, 1911, 77 (Galindo, Tamaulipas).

*A[thene] gnoma* GRAY, Gen. Birds, i, 1845, 35.

[*Athene*] *gnoma* GRAY, Hand-list, i, 1869, 42, no. 434.

*Glaucidium passerinum*, var. *californicum* (not *G. californicum* Sclater) RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 317, part (Mexico); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 81, part (table-land of Mexico).

[*Glaucidium passerinum*] *b. californicum* COUES, Birds Northwest, 1874, 317, footnote, part (table-land of Mexico).

[*Glaucidium*] *elata* BONAPARTE, Consp. Av., i, 1850, 36 (Mexico; coll. Vienna Mus.; ex. *Strix elata* Natterer, manuscript).

*Glaucidium ridgwayi* SHARPE, Ibis, 3rd ser., v, Jan., 1875, 47, part (Cobán, Guatemala; supposed young).

(?) *Glaucidium cobanense* SHARPE, Ibis, 3rd ser., v, April, 1875, 260, in text (Cobán, Vera Paz, Guatemala; coll. Paris Mus.); Cat. Birds Brit. Mus., ii, 1875, 199, pl. 13, fig. 1.—NELSON, Auk, xi, 1894, 43.

(?) [*Glaucidium*] *cobanense* SHARPE, Hand-list, i, 1899, 298.

### GLAUCIDIUM GNOMA HOSKINSII Brewster.

#### HOSKINS' PYGMY OWL.

Very similar in general coloration to *G. g. gnoma*, but streaks on under parts browner (less blackish) and band across throat much paler brown; wing shorter and tail longer.

*Adult male*.—Length (skins), 145.5–155 (150); wing, 86–89 (87.1); tail, 61–65.5 (63); culmen, from cere, 9.5–10.5 (9.9).<sup>b</sup>

*Adult female*.—Length (skins), 141.5–145.5 (143.5); wing, 87–89 (88); tail, 61.5; culmen, from cere, 10.5–11 (10.7).<sup>c</sup>

Southern Lower California (Sierra de la Laguna; near Triunfo).

*Glaucidium gnoma hoskinsii* BREWSTER, Auk, v, April, 1888, 136 (Sierra de la Laguna, s. Lower California; coll. W. Brewster).—CHAPMAN, Auk, v, 1888, 395.—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 408.

*Glaucidium hoskinsii* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 9; Abridged Check List, 1889, no. 379.1; Check List, 2d ed., 1895, no. 379.1.—BRYANT, Proc. Calif. Ac. Sci., ser. 2, ii, 1889, 285 (Sierra de la Laguna and Comondú, Lower California).—ALLEN, Auk, x, 1893, 142.—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 593.—BREWSTER, Bull. Mus. Comp. Zool., xli, pt. i, 1902, 98 (Sierra de la Laguna).

<sup>a</sup> Exclusive of references to *Glaucidium ferrugineum* and *G. infuscatum* var. *gnoma* Lawrence, from Mazatlan, both of which pertain to *G. brasilianum ridgwayi*!

<sup>b</sup> Four specimens.

<sup>c</sup> Two specimens.

*Glaucidium hoskinsi* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Check List, 3rd ed., 1910, 178.

[*Glaucidium*] *hoskinsi* SHARPE, Hand-list, i, 1899, 298.

**GLAUCIDIUM GNOMA PINICOLA Nelson.**

**ROCKY MOUNTAIN PYGMY OWL.**

Similar to *G. g. gnoma* but decidedly larger and general color of upper parts averaging much grayer (usually hair brown or grayish hair brown), and streaks on under parts more decidedly black.

*Adult male*.—Length (skins), 158–167 (162); wing, 94–96.5 (95.4); tail, 62.5–68 (66.4); culmen (from cere), 10.5–11.5 (10.8).<sup>a</sup>

*Adult female*.—Length (skins), 149–179 (170); wing, 98–105 (101.4); tail, 66–78.5 (71.7); culmen (from cere), 10.5–12 (11.4).<sup>b</sup>

Rocky Mountain district of United States, from Arizona (Huachuca Mountains; Santa Catalina Mountains; Fort Whipple; Flagstaff; 30 miles south of Apache; Mogollón Mountains; Fort Verde; Oak Orchard; Tonto Basin; Gila River; etc.) and New Mexico (Fort Bayard; upper Pecos River; Jemez Mountains; Alma; Luna; San Pedro), through Colorado (Wet Mountains, Huérfino County; Beulah; Boulder; near Denver; Bear Creek; near Durango; Pueblo; Cheyenne Mountain; Ute Pass; Good Spring Creek, Routt County; Chaffee County), and Wyoming to Montana (Gold Run, Belt Mountains; Miles City; Gallatin County; Silver Bow County).

*Glaucidium gnoma* (not of Wagler) COUES, Ibis, 1865, 162, in text (Ft. Whipple, Arizona); Proc. Ac. Nat. Sci. Phila., 1866, 50 (Ft. Whipple; crit.); Check List, 2d ed., 1882, no. 484, part.—RIDGWAY, Ibis, 1876, 12, part (Arizona; Colorado; crit.); Field and Forest, ii, 1877, 210 (Boulder Co., Colorado); Proc. U. S. Nat. Mus., iii, 1880, 192, part; Nom. N. Am. Birds, 1881, no. 409, part.—BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 27 (Chiricahua Mts., Arizona, 10,000 ft.; Ft. Bayard, New Mexico; crit.).—WILLIAMS (R. S.), Bull. Nutt. Orn. Club, viii, 1883, 59 (Gold Run, Belt Mts., Montana).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 379, part.—HENSHAW, Auk, iii, 1886, 79 (upper Pecos R., New Mexico; habits).—SMITH (H. G., jr.), Auk, iii, 1886, 284 (Bear Creek and near Denver, Colorado).—MEARNS, Auk, vii, 1890, 54 (Whipple Barracks, Tonto Basin, Mogollon Mts., etc., Arizona).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 403, part.—LOWE, Auk, xi, 1894, 268 (Wet Mts., Colorado, 7,800–10,000 ft.).—COOKE, Birds Colorado, 1897, 81 (resident in mountains up to 10,000 ft.; Denver, Feb. 18, 1888; near Durango, winter 1888–89); Bull. 44, Col. Agric. Exp. Sta., 1898, 161 (Pueblo, Colorado, Nov. 1; Cheyenne Mt., winter; Ute Pass, breeding).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 9 (Huachuca Mts., Arizona).—CAMERON, Auk, xxiv, 1907, 269 (Miles City, Montana).—HENDERSON, Univ. Colo. Studies Zool., vi, 1909, 230 (plains and lower mts., Colorado).—FELGER, Univ. Colo. Studies Zool., vii, 1910, 137 (Good Spring Creek, Routt Co., n. w. Colorado).—WARREN (E. R.), Auk, xxvii, 1910, 146 (Chaffee Co., Colorado).—SAUNDERS, Auk, xxviii, 1911, 37 (Gallatin Co., Montana).

<sup>a</sup> Five specimens.

<sup>b</sup> Seven specimens.



- G[laucidium] gnoma* COUES, Key N. Am. Birds, 2d ed., 1884, 514, part.—RIDGWAY, Man. N. Am. Birds, 1887, 266, part.
- [*Glaucidium*] *gnoma* SHARPE, Hand-list, i, 1899, 298, part.
- Glaucidium gnoma gnoma* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 178, part.—SAUNDERS, Condor, xiv, 1912, 26 (Silver Bow Co., s. w. Montana).
- [*Glaucidium*] *passerinum*, var. *californicum* (not *Glaucidium californicum* Sclater) COUES, Key N. Am. Birds, 1872, 206, part.
- Glaucidium passerinum*, var. *californicum* RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 317, part (monogr.); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 81, part.—HENSHAW, Rep. Orn. Wheeler's Surv., 1874, 136 (Apache, Gila R., etc., Arizona).
- Glaucidium passerinum* . . . var. *californicum*? RIDGWAY, Bull. Essex Inst., v, 1873, 185 (Colorado).
- Glaucidium passerinum* . . . var. *californicum* COUES, Check List, 1873, no. 329, part.—HENSHAW, Zool. Exp. W. of 100th Merid., 1875, 407 (near Camp Apache, White Mts., and Gila R., Arizona; habits).
- [*Glaucidium passerinum*] b. *californicum* COUES, Birds Northwest, 1874, 317, footnote, part.
- Glaucidium gnoma pinicola* NELSON, Proc. Biol. Soc. Wash., xxiii, June 24, 1910, 103 (Alma, New Mexico; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxix, 1912, 382.
- G[laucidium] gnoma pinicola* GRINNELL (J.), Auk, xxx, 1913, 224 (measurements).

#### GLAUCIDIUM GNOMA CALIFORNICUM (Sclater).

##### CALIFORNIA PYGMY OWL.

Similar to *G. g. pinicola* but decidedly browner, the general color of the upper parts deep broccoli brown to light bistre or grayish snuff brown.

*Adult male*.—Length (skins), 154–175 (165); wing, 89.5–97 (93.6); tail, 61–68.5 (65.9); culmen (from cere), 10–11 (10.9).<sup>a</sup>

*Adult female*.—Length (skins), 156–184 (169); wing, 92.5–102 (95.3); tail, 63.5–72.5 (67.2); culmen (from cere), 10.5–12 (11.2).<sup>b</sup>

California (except humid coast district from Monterey northward), in mountains, from San Diego, Riverside, and San Bernardino counties northward along coast mountains to Los Angeles County and through Sierra Nevada to Mount Shasta; thence northward along Cascade Range and foothills and mountains of middle and eastern Oregon and Washington to southern British Columbia (Mount Lehman; Vernon; Okanogan, Feb. 12; Chilliwack; Sumas, Feb. 16; Willow River, Caribou District) and northwestern Idaho (Nez Perces Reservation; Fort Sherman).

(?) *Athene infusata* (not *Strix infusata* Temminck) HEERMANN, Journ. Ac. Nat. Sci., Phila., ii, 1853, 260 (Calaveras River, California).—NEWBERRY, Rep. Pacific R. R. Surv., vi, pt. iv, 1857, 77 (Cascade Mts.).

*Glaucidium californicum* SCLATER, Proc. Zool. Soc. Lond., 1857, 4 (California; based on *G. infusatum* Cassin; type in coll. Ac. Nat. Sci. Phila.).—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 132 (Camp Harney, Oregon; see Proc. Bost. Soc. N. H., xviii, 1875, 162).

<sup>a</sup> Seven specimens.

<sup>b</sup> Twelve specimens.

- [*Glaucidium*] *passerinum* var. *californicum* COUES, Key N. Am. Birds, 1872, 206, part.
- Glaucidium passerinum*, var. *californicum* RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 317, part (monogr.); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 81, part.
- Glaucidium passerinum* . . . var. *californicum* COUES, Check List, 1873, no. 329, part.
- [*Glaucidium passerinum*] b. *californicum* COUES, Birds Northwest, 1874, 317, footnote, part.
- Glaucidium gnoma californicum* BROOKS, Auk, xx, 1903, 281 (Willow R., Caribou Distr., Brit. Columbia).
- Glaucidium gnoma* (not of Wagler) CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 62, part (Cascade Mts.; California).—BAIRD, Cat. N. Am. Birds, 1859, no. 60, part.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 192, part; Nom. N. Am. Birds, 1881, no. 409, part.—BELDING, Proc. U. S. Nat. Mus., i, 1879, 434 (Murphy's and Soda Springs, California); v, 1883, 550 (Murphy's; notes).—BENDIRE, Bull. Nutt. Orn. Club, viii, 1883, 242 (Ft. Klamath, e. Oregon; descr. nest and eggs); Life Hist. N. Am. Birds, (i), 1892, 403, part.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 379, part.—MERRILL (J. C.), Auk, v, 1888, 146 (Ft. Klamath, e. Oregon; habits); xiv, 1897, 353 (Ft. Sherman, n. w. Idaho).—RHODES, Auk, x, 1893, 18 (Vernon, e. Brit. Columbia); Proc. Ac. Nat. Sci. Phila., 1893, 41 (Vernon).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 24 (mts. north of Pasadena, Los Angeles Co., California).—RAY, Auk, xx, 1903, 183 (Glen Alpine, centr. Sierra Nevada, 6,700 ft., breeding).—SHARP, Condor, ix, 1907, 87 (San Diego Co., California, breeding).
- Glaucidium gnoma* COUES, Key N. Am. Birds, 2d ed., 1884, 514, part.—RIDGWAY, Man. N. Am. Birds, 1887, 266, part.
- Glaucidium gnoma gnoma* GRINNELL (J.), Pacific Coast Avifauna, no. 3, June 25, 1902, 36 (California range; east of Coast Range, from Mt. Shasta to San Bernardino Mts.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 178 (Caribou District, Brit. Columbia).—SWARTH, Condor, xii, 1910, 109 (San Bernardino Mts., s. California, breeding).—WILLETT, Pacific Coast Avifauna, no. 7, 1912, 53 (mts. north of Pasadena, Arroyo Seco, and San Gabriel Canyon, Los Angeles Co.; near Carpintera, Santa Barbara Co; near Escondido, San Diego Co.; San Bernardino Mts., 5,500–6,753 ft.).
- Glaucidium gnoma vigilante* GRINNELL (J.), Auk, xxx, April, 1913, 224 (4 miles north of Pasadena, Los Angeles Co., California, 2,250 ft. alt.; coll. J. Grinnell).

### GLAUCIDIUM GNOMA GRINNELLI Ridgway.<sup>a</sup>

#### COAST PYGMY OWL.

Similar to *G. g. californicum* but much browner, the general color of upper parts varying from deep snuff brown to verona brown; spots on upper parts (especially those on pileum and hindneck) distinctly fulvous or rufescent.

*Adult male*.—Length (skins), 159–194 (169); wing, 89–96 (93), tail, 61–70 (64.5); culmen (from cere), 10–11 (10.5).<sup>b</sup>

<sup>a</sup> New subspecies. (Type no. 107389, coll. U. S. Nat. Mus., adult male, Humboldt Bay, Calif., Nov. 28, 1885; C. H. Townsend.)

<sup>b</sup> Nine specimens.

*Adult female*.—Length (skins), 158–186 (168); wing, 88.5–100.5 (94.9); tail, 62–72.5 (66.6); culmen (from cere), 10.5–11.5 (10.9).<sup>a</sup>

Humid coast district of California (from Monterey County northward), Oregon, Washington, and coast mainland of southern British Columbia (Port Moody; New Westminster; Sumas; Okanogan, February; Chilliwack, Nov. 30; Mount Lehman; extreme southern end of Vancouver Island?); east to west base of Mount Shasta and Lake County, California, and (casually?) to Spokane, eastern Washington.

*Strix passerinoides* (not of Temminck) TOWNSEND (J. K.), Journ. Ac. Nat. Sci. Phila., viii, 1839, 152.—AUDUBON, Orn. Biog., v, 1839, 271, pl. 432, figs. 4, 5.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 2d ed., 1840, 148 (Ft. Vancouver, Washington; habits).

*Surnia passerinoides* AUDUBON, Synopsis, 1839, 23; Birds Am., oct. ed., i, 1840, 117, pl. 30.

(?)*Glaucidium infuscatum* (not *Strix infuscata* Temminck) CASSIN, Illustr. Birds Calif., Texas, etc., 1854, 189, part (Oregon).

*Glaucidium californicum* SCLATER, Proc. Zool. Soc. Lond., 1857, 126 (not of p. 4!; San José Valley, California; crit.).—COOPER, Orn. Calif., 1870, 444, part.—ALLEN (C. A.), Bull. Nutt. Orn. Club, iii, 1878, 193 (Nicasio, Marin Co., California; habits).—COOPER (W. A.), Bull. Nutt. Orn. Club, iv, 1879, 86 (Santa Cruz, California; breeding habits; descr. nest and eggs).

[*Glaucidium*] *californicum* SHARPE, Hand-list, i, 1899, 298, part.

[*Glaucidium*] *passerinum* var. *californicum* COUES, Key N. Am. Birds, 1872, 206, part.

*Glaucidium passerinum* . . . var. *californicum* COUES, Check List, 1874, no. 329, part.

[*Glaucidium passerinum*] b. *californicum* COUES, Birds Northwest, 1874, 317, footnote, part.

*Glaucidium passerinum* var. *californicum* RIDGWAY, Proc. Bost. Soc. N. H., xvi, May, 1873, 94, part (descr. of adult male; monogr.); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 81, part (descr. adult male).

*Glaucidium passerinum californicum* BREWSTER, Bull. Nutt. Orn. Club, iv, Jan., 1879, 42 (Nicasio, California; descr. autumnal plumage of young).

*Glaucidium gnoma californicum* BENDIRE, Auk, v, Oct., 1888, 366 (coast, from San Francisco Bay to British Columbia).—AMERICAN ORNITHOLOGISTS' UNION, Suppl. to Check List, 1889, 9; Check List, 2d ed., 1895, no. 379a; 3d ed., 1910, 178.—CHAPMAN, Bull. Am. Mus. N. H., iii, 1890, 136 (Mt. Lehman, etc., s. w. Brit. Columbia).—LAWRENCE (R. H.), Auk, xii, 1892, 44 (East Humptulips, Washington).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 407.—ROADS, Proc. Ac. Nat. Sci., Phila., 1893, 42 (Brit. Columbia west of Cascade Mts.).—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 593.—BROOKS, Auk, xvii, 1900, 106 (Brit. Columbia).—JOHNSON (A. W.), Condor, iv, 1902, 18 (Hasting's Ranch, Lake County, California).—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 36 (California range).—RATHBUN (S. F.), Auk, xix, 1902, 134 (Seattle, Washington).—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 581 (Mt. Sanhedrin, Mendocino Co., California).—KERMODE, Provinc. Mus. Victoria, 1909, 47, part (s. part of mainland coast, Brit. Columbia).

G[*laucidium*] *gnoma californicum* NELSON, Proc. Biol. Soc. Wash., xxiii, 1910, 104 (measurements).—GRINNELL (J.), Auk, xxx, 1913, 224 (measurements).

<sup>a</sup> Twelve specimens.



*Glaucidium gnoma* (not of Wagler) CASSIN, in Baird, Rep. Pacific R. R. Surv., ix, 1858, 62, part (Ft. Steilacoom and Shoalwater Bay, Washington).—BAIRD, Cat. N. Am. Birds, 1859, no. 60, part.—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, book ii, pt. iii, 1860, 153 (Puget Sound and Ft. Steilacoom, Washington).—LORD, Intellect. Observer, 1865, 409 (Brit. Columbia; habits).—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., iv, 1887, 204 (Humboldt Bay, California; west base Mt. Shasta).

### GLAUCIDIUM GNOMA SWARTHII Grinnell.

#### VANCOUVER PYGMY OWL.

Similar to *G. g. californicum* but coloration decidedly darker and more sooty, the general color of upper parts dark bistre or deep warm-sepia brown; throat-band and color of sides of breast decidedly less rufescent brown; tail darker.

*Adult male*.—Length (skins), 149–166 (158); wing, 86.5–95.5 (90); tail, 60–66 (62); culmen (from cere), 10.5–11.5 (11).<sup>a</sup>

*Adult female*.—Length (skins), 170–180 (176); wing, 92.5–96 (94.5); tail, 65–66 (65.3); culmen (from cere), 11–11.5 (11.3).<sup>b</sup>

Vancouver Island, British Columbia (Errington; Parkville; head of Central Lake; Victoria?).<sup>c</sup>

*Glaucidium gnoma* (not of Wagler) BROWN, Ibis, 1868, 419 (Vancouver Is.)

*Glaucidium gnoma californicum* (not *Glaucidium californicum* Sclater) KERMODE, Provincial Mus. Victoria, 1909, 47, part (Vancouver Is.).—SWARTH, Univ. Calif. Pub. Zool., x, 1912, 31 (Errington; Parkville; head of Central Lake; crit.).

*Glaucidium gnoma swarthi* GRINNELL (J.), Auk, xxx, April, 1913, 224 (Errington, Vancouver Island, Brit. Columbia; coll. Calif. Mus. Vert. Zool.).

### GLAUCIDIUM PALMARUM Nelson.

#### PALM PYGMY OWL

Somewhat similar to the rufescent phase of *G. gnoma gnoma*, but stripes on under parts broader and light cinnamon-brown or sayal brown (none of them approaching blackish); white or pale cinnamon-buffy spots on pileum smaller (those on forehead roundish instead of longitudinally guttate), and feathering on lower part of tarsus shorter and thinner; wings and tail shorter (especially the latter).

*Adult male*.—Pileum and hindneck drab, thickly sprinkled with small dots of dull white, those on forehead circular, not at all inclining to longitudinal or guttate form; lower hindneck crossed by an indistinct collar of pale cinnamon-buffy, intermixed with dull white in middle portion, and laterally immediately preceded by a blackish

<sup>a</sup> Five specimens.

<sup>b</sup> Three specimens.

<sup>c</sup> Specimens from Victoria are scarcely distinguishable from mainland examples, and the birds from the extreme southern end of the island may be more properly referable to *G. g. grinnelli*.

transverse spot on each side; back, rump, scapulars, and wing-coverts hair brown (rather more decidedly brownish than pileum and hindneck), the back and rump with a few minute longitudinal flecks of whitish, the scapulars with much larger transverse and roundish spots of the same, suffused marginally with pale cinnamon-buffy (those on anterior scapulars mostly of the latter color); middle wing-coverts with a few rather large terminal spots of buffy white, some of the greater coverts edged terminally or subterminally on outer webs with the same; secondaries crossed by about four or five narrow bands of pale dull cinnamon-buffy in closed wing, these becoming light brown (barely distinguishable from the very slightly darker interspaces) on underlying portion of outer webs; primaries darker grayish brown (nearly hair brown), their outer webs very indistinctly spotted (in transverse series) with paler brown, the spots much more distinct, and brownish buffy, on distal portion of two longest quills; upper tail-coverts similar in color to rump, etc., but very slightly more rufescent, and with a few minute longitudinal spots or specks of pale cinnamon-buffy; tail deep grayish brown (hair brown), crossed by five transverse series of transversely oval white spots (these largest on middle pair of rectrices, smaller and strongly tinged or suffused with cinnamon-buffy on lateral rectrices), the inner webs with much larger spots in corresponding position; rectrices also whitish at extreme base and narrowly tipped with the same; "eyebrow" and lores dull whitish, the latter with bristly shafts conspicuously black; suborbital and auricular regions dull buffy whitish, rather broadly barred with dark grayish brown; malar region immaculate buffy white anteriorly, becoming nearly pure white posteriorly (beneath auricular region); chin dull buffy white; across the throat a broad, unbroken, band of light buffy brown or wood brown, slightly darker along anterior edge (next to the white subauricular patch); lower throat and foreneck and median portion of chest immaculate white; sides of foreneck, sides of chest, and sides of breast light cinnamon-brown or sayal brown, with a few (mostly concealed) small transverse spots of whitish; rest of under parts buffy white, rather broadly striped with cinnamon-brown or sayal brown, the under tail-coverts, however, with only very small and narrow subterminal streaks of the same on longer feathers; legs pale cinnamon-buff, rather strongly tinged with cinnamon on lower part of thighs; under wing-coverts buffy white, with a line of brown streaks on outer side, parallel with edge of wing, the under primary coverts broadly tipped with grayish brown; under surface of remiges transversely banded with grayish brown and pale buff (the latter broadest), the buffy bands becoming obsolete on distal portion of longer and outermost primaries; bill pale yellowish, darker or horn color on sides of maxilla

in front of nostril; toes light yellowish brown (in dried skins); length (skin), 143.5; wing, 84.5; tail, 54; culmen (from cere), 9.5.<sup>a</sup>

*Adult female*.—Similar to the adult male but pileum and hindneck browner, the spots larger and pale cinnamon-buff instead of white; wings more distinctly spotted, and legs decidedly cinnamon-brownish; length (skin), 147.5; wing, 85; tail, 55; culmen (from cere), 9.5.<sup>b</sup>

Southwestern Mexico, in Territory of Tepic (Arroyo de Juan Sanchez) and State of Guerrero (El Naranjo).

*Glaucidium palmarum* NELSON, Auk, xviii, Jan., 1901, 46 (Arroyo de Juan Sanchez, Tepic; coll. U. S. Nat. Mus.).

*minutissimus*

**GLAUCIDIUM PUMILUM GRISEICEPS (Sharpe).**

**GRAY-HEADED PYGMY OWL.**

Similar to *G. p. pumilum*<sup>c</sup> but coloration darker and less rufescent, especially the stripes on under parts.

*Adults (sexes alike)*.—Pileum and hindneck hair brown to bister, with numerous small dots of white to light cinnamon-buff; across lower hindneck a broken collar of large, irregular, white spots (partly concealed) intermixed with black, the latter mostly on lateral portions; back, rump, scapulars, and wing-coverts plain bister to vandyke brown or nearly burnt umber, the outermost middle and greater wing-coverts with a few spots of white to pale dull brownish buff, the outer webs of exterior scapulars usually with concealed rounded spots of the same; remiges dark grayish brown (nearest clove brown or fuscous), the proximal secondaries lighter and browner (more like color of back); outer webs of secondaries more or less distinctly spotted along edge with pale cinnamon or cinnamon-buff, the spots arranged in transverse series, sometimes forming distinct bands; distal portion (except terminally) of third and fourth primaries (from outside) with two or three spots of pale cinnamon or cinnamon-buff on outer web, the fifth sometimes with one spot of the same, the remaining portion usually plain dusky but sometimes showing very faint spots of paler fuscous; tail dark grayish brown (dusky drab to blackish brown) with larger or smaller rounded spots of white, these most distinct on middle pair of rectrices, wanting on from two to four outer pairs, the terminal ones confined to inner web; inner webs of all the rectrices with large transverse ovoid spots of white, reaching half way, or more, from edge to shaft; "eyebrow" and posterior portion of lores dull white, the longer bristly feathers of the lores mostly black, or at least with black shafts; suborbital and auricular regions barred or

<sup>a</sup> One specimen, from El Naranjo, Guerrero.

<sup>b</sup> One specimen (the type) from Arroyo de Juan Sanchez, Tepic.

<sup>c</sup> See page 781.



transversely spotted with dull white and brown, the latter sometimes brown indistinctly barred or flecked with paler; chin dull white; malar and subauricular regions immaculate white; a broad band of brown across middle of throat, this paler and sometimes slightly broken medially, darker and uniform laterally; lower throat and upper chest and median line of breast and abdomen immaculate white; sides of breast verona brown to mars brown or dark russet, sometimes with a few small spots or flecks of white; rest of under parts white, broadly striped (except on median portion) with verona brown to dark russet or nearly chestnut-brown, the under tail-coverts with much smaller and narrower mesial streaks on longer feathers only; legs cinnamon-buffy (deeper or paler), more or less mottled, especially on outer side, with brown; under wing-coverts pale buff with a longitudinal series of blackish brown streaks running parallel with edge of wing, the under primary coverts each with a large black terminal guttate spot of blackish brown; under surface of remiges mostly pale buff, except distally and on outer primaries, the buff portion banded, except basally, with dark grayish brown, the dusky portion indistinctly banded with paler grayish brown or brownish gray; bill dull yellowish; iris yellow; toes pale yellowish brown (in dried skins).

*Young*.—Similar to adults, but pileum and hindneck plain grayish brown or brownish gray, the broken collar across lower hindneck without black admixture.

*Adult male*.—Length (skins), 128.5–129.5 (129); wing, 86–88.5 (87.2); tail, 44.5–48 (46.2); culmen (from cere), 10–10.5 (10.2).<sup>a</sup>

*Adult female*.—Length (skin), 144; wing, 96.5; tail, 55; culmen (from cere), 10.5.<sup>b</sup>

Highlands of Guatemala (Chiséc; Choctúm) and southward through British Honduras (Southern Pine Ridge), Honduras (Yaruca) and Costa Rica (La Vijágua) to Panamá (Verágua).

*G[laucidium] pumilum* (not *Strix pumila* Temminck) RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 92, part (Guatemala).

*Glaucidium pumilum* (not *Strix pumila* Temminck) RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 97, part (Guatemala); Ibis, 1876, 15, part (Guatemala; crit.).—ZELEDON, Anal. Mus. Nac. C. R., i, 1887, 125 (Costa Rica).

*Glaucidium griseiceps* SHARPE, Ibis, 3rd ser., v, Jan., 1875, 41, pl. 2, fig. 2 (Guatemala; coll. Brit. Mus.), 56 (geog. range); Cat. Birds Brit. Mus., ii, 1875, 196 (Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., iii, 1897, 36 (Southern Pine Ridge, Brit. Honduras; Chisec and Choctum, Guatemala; Veragua, Panama).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 144 (Yaruca, Honduras); Proc. Biol. Soc. Wash., xxii, 1909, 32 (La Vijagua, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 478 (La Vijagua).

[*Glaucidium*] *griseiceps* SHARPE, Hand-list, i, 1899, 298.

<sup>a</sup> Two specimens; one from Yaruca, Honduras, the other from Vijagua, northern Costa Rica.

<sup>b</sup> One specimen, from Yaruca, Honduras.

## GLAUCIDIUM FISHERI Nelson and Palmer.

## FISHER'S PYGMY OWL.

Most nearly resembling the rufescent phase of *G. gnoma gnoma* but darker, with color of pileum and hindneck grayish brown or brownish gray in strong contrast with the warm sepia or deep prouts brown of back; forehead streaked with pale buff, the rest of pileum, together with hindneck immaculate superficially; collar across lower hindneck more spotted with black and white, and without rusty or cinnamomeous suffusion posteriorly; sides of breast darker brown, and stripes on under parts broader.

*Adult female*.—Pileum deep hair brown, the hindneck and sides of neck more grayish; forehead with guttate streaks of pale buff, the crown with concealed, minute, short shaft-streaks of the same, the sides of neck with concealed transverse spots of buffy white; across lower hindneck a collar of rather large buffy white to pale buff spots, slightly intermixed with black, especially laterally; back, scapulars, wing-coverts, rump, and upper tail-coverts deep prouts brown or warm-sepia brown, the first immaculate; outermost scapulars with rather large roundish spots of pale cinnamon-buff; wing-coverts with a few very small longitudinal spots of cinnamon, the outermost greater coverts with a longitudinally ovate spot of cinnamon-buff on edge of terminal portion of outer web; remiges deep grayish brown (dark hair brown), the secondaries crossed by about five transverse series of semirounded spots of dull ochraceous-buff or clay color, these along edge of outer webs; primaries with very indistinct (hardly discernible) faint bands of very slightly paler brown, these replaced, however, on distal portion of third and fourth quills (from outside) by distinct spots of light cinnamon-buff—three on third quill, one on the fourth; upper tail-coverts with small, irregular, transverse spots (largely concealed) of pale cinnamon-buff; tail dark clove brown or fuscous, crossed by about seven (the last terminal) narrow, interrupted bands of buffy white suffused with pale cinnamon or cinnamon-buff, these very much broader on inner web and not reaching nearly to shaft on either web; “eyebrow” and posterior part of lores (narrowly) dull grayish white, the rest of lores black superficially (the concealed bases of feathers being dull grayish white); suborbital and auricular regions dusky brown with very narrow shaft-streaks of whitish, the terminal part of auricular region with broader streaks of cinnamon-buff; malar and subauricular regions and chin immaculate dull white; across throat a rather broad band of brown, becoming more rufescent or russet laterally (beneath white subauricular area); lower throat and center of chest immaculate white; sides of chest brown with indistinct (mostly concealed) roundish, guttate, or rhomboid spots of cinnamon or pale cinnamon-brown, the outer portion of

sides nearly uniform paler brown; rest of under parts buffy white, broadly streaked, or striped, with blackish brown or brownish black, except along median line, which is immaculate; longer under tail-coverts with a small, narrow, terminal or subterminal streak of dusky brown; legs pale buffy grayish, suffused with cinnamon-buff, especially on thighs, and very faintly flecked with darker; under wing-coverts pale cinnamon-buff with a line of black streaks running parallel with edge of wing; under surface of remiges banded with pale cinnamon-buff (on secondaries) to buffy white or very pale buff (on primaries), the lighter bands becoming obsolete or indistinct (grayish) on distal portion of longer and outermost primaries; bill grayish horn color, the culmen, tip, and tomia paler and more yellowish; toes light brownish (in dried skins); length (skin), 142.5; wing, 86; tail, 57; culmen (from cere), 9.<sup>a</sup>

Eastern Mexico, in State of Puebla (Tochimilco).

*Glaucidium fisheri* NELSON and PALMER, Auk, xi, Jan., 1894, 41 (Tochimilco, Puebla, e. Mexico; coll. U. S. Nat. Mus.).

[*Glaucidium*] *fisheri* SHARPE, Hand-list, i, 1899, 298.

#### GLAUCIDIUM BRASILIANUM RIDGWAYI (Sharpe).

##### STREAK-CROWNED PYGMY OWL.

Similar to *G. b. brasilianum* of Brazil, etc.,<sup>b</sup> but lighter in color and averaging rather smaller.

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<sup>a</sup> One specimen (the type).

<sup>b</sup> True *G. brasilianum* occurs in Brazil and other parts of South America, but the extent to which the South American representatives of the species should be divided into geographic subspecies I am not prepared to say. The Trinidad bird (*G. brasilianum phalaenoides*) seems to be a fairly well-marked form, however. The Central American form (*G. b. ridgwayi*) is by no means a very strongly marked subspecies, though I must confess that the meagre South American material examined by me does not afford a satisfactory comparison. It has been claimed that the rufescent stage is much less common among the Central American than among the South American birds. In order to test this, I divided the series of 304 adult specimens examined into three series, according to the character of their plumage, as follows: (1) Specimens with the tail banded with brown (or blackish) and white; (2) specimens with the tail banded with brown and cinnamon-rufous, but otherwise like series 1 in coloration; and (3) specimens having the tail as in series 2, but with the rest of the upper parts more or less distinctly rufescent. Each of these three styles of coloration are represented geographically as follows:

I=Specimens with white tail-bands and grayish brown backs.

II=Specimens with rufous tail-bands and grayish brown backs.

III=Specimens with rufous tail-bands and rufous or rufous-brown backs.



*Grayish brown phase with white tail-bands.*

*Adults (sexes alike).*.—General color of upper parts deep hair brown or broccoli brown to nearly snuff brown, the pileum and hindneck usually concolor with back, etc., but sometimes slightly more grayish brown; pileum and hindneck narrowly streaked with dull white to pale brownish buff, the streaks usually linear but sometimes inclining to narrowly guttate form; across lower hindneck a broken collar of white or pale buffy, some of the feathers tipped with black, especially laterally, where the black sometimes forms a more or less distinct transverse patch; scapulars with large roundish spots of white, mostly on outer webs, the back and rump (sometimes upper tail-coverts also) usually with much smaller, mostly concealed, whitish spots; large wing-coverts more or less spotted with white; remiges dark grayish brown, crossed by narrow bands of lighter brown, these often becoming white on edges of secondaries and on distal portion of longer primaries; tail deep brown or grayish brown to blackish brown, crossed by about six narrow interrupted bands of white, or transverse white spots (these not touching shaft on either web) usually narrowly tipped or terminally margined with whitish, the brown interspaces more or

Footnote—Continued.

Locality.	I.	II.	III.	Total.
Texas.....		36		36
Arizona.....		5	1	6
Mexico (except Yucatan and Campeche).....	11	52	63	126
Yucatan and Campeche.....	2	17	15	24
Guatemala.....	1		3	4
Salvador.....	6		3	9
Honduras.....	1		2	3
Nicaragua.....	1		1	2
Costa Rica.....	9	1	15	25
Panama.....			1	1
Colombia.....	9	1	4	14
Venezuela.....	3		7	10
Trinidad.....	3	1	8	12
Brazil.....	4		13	17
Peru.....	3	1	1	5
	53	114	137	304

It is not possible to draw a sharp line between plumages I and II or between II and III, many specimens being intermediate, and these have had to be arbitrarily placed. In the former instance all specimens having white predominating in the tail-bands have been referred to group I, while in the latter all those showing little contrast in color between the back and the tail have been referred to group III. Quite evidently the relative proportion of the rufescent to the other plumage must vary according to the particular series obtained in any one country, though it seems significant that all of the considerable number of Texas examples represent one style of plumage only.

less distinctly darker next to the white bands or spots, which, together with the brown interspaces, are sometimes more or less suffused with pale rusty; "eyebrow" (superciliary region), lores, malar and subauricular regions, and chin white, the loreal feathers with the strong bristly shafts black; suborbital and auricular regions dull white or brownish white streaked with dusky brown; across middle of throat a band of grayish white, sometimes broken or interrupted in middle portion, the lateral portion, next to white subauricular area, margined posteriorly with blackish; foreneck and median portion of chest, breast, and abdomen immaculate white; sides of breast brown or grayish brown, usually with more or less distinct, partly concealed, spots of white or pale brownish buffy; sides and flanks white broadly streaked with brown or grayish brown; legs dull white to pale brownish buffy, usually more or less mottled with brown; under tail-coverts white, the longer ones with narrow mesial streaks of brown on distal portion, these streaks sometimes expanded into a spot terminally; under wing-coverts buffy white or very pale dull buff (along edge of wing more decidedly white), with a series of broad longitudinal streaks of grayish brown running parallel with edge of wing; under primary coverts with terminal half (approximately) abruptly dark grayish brown or dusky; inner webs of remiges banded with dusky and buffy white, the paler bands becoming grayish and less distinct on distal portion of longer and outer primaries; bill and cere yellowish (dull light greenish yellow or grayish yellow in life); iris lemon yellow; toes dull greenish yellow or grayish yellow.

*Grayish brown phase with rufous tail-bands.*

Similar to the above, but pale bands on tail cinnamon-rufous (more or less deep) instead of white, the rufescent bands often broader than the brown or dusky interspaces and frequently continuous (not interrupted at shafts); upper tail-coverts usually suffused with cinnamon-rufous, sometimes wholly of that color.

*Rufescent phase.*

*Adults (sexes alike).*—Above cinnamon-rufous (more or less deep), varying to ochraceous-cinnamon <sup>a</sup> and reddish russet, <sup>b</sup> the color more uniform than in the brown phases; tail sometimes quite uniform cinnamon-rufous, no trace of bands being visible, though usually these are more or less indicated, often distinct and sharply defined; streaks on pileum and hindneck pale cinnamon-rufous, instead of white, and usually much less distinct than in brown phases; markings

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<sup>a</sup> This lighter extreme represented by a specimen from Santa Maria, Vera Cruz, Mexico.

<sup>b</sup> This dark extreme represented by two examples from Honduras.

on under parts cinnamon-rufous or rufescent brown, the white portions often tinged or suffused with buff or ochraceous.<sup>a</sup>

*Young (of all phases).*—Similar to adults, but pileum without distinct (if any) streaks.

*Adult male.*—Length (skins), 138–170 (159); wing, 86.5–97 (92.1); tail, 52.5–65.5 (59.7); culmen, from cere, 9.5–12 (11).<sup>b</sup>

*Adult female.*—Length (skins), 155–180 (166); wing, 93–102.5 (97.1); tail, 55.5–69.5 (62.5); culmen, from cere, 10.5–13 (11.6).<sup>c</sup>

Lower Rio Grande Valley in southern Texas (Brownsville and Fort Brown, Cameron County; Hidalgo and Lomita Ranch, Hidalgo County) and southern Arizona (Camp Lowell; Tucson; Rillito Creek, near Tucson; New River; Casa Grande; mountains of Pima

<sup>a</sup> In more richly colored specimens.

<sup>b</sup> Thirty-two specimens.

<sup>c</sup> Twenty-one specimens.

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
Seven adult males from Texas.....	92.2	62.4	10.8
Two adult males from Vera Cruz.....	94	60	10.7
One adult male from Oaxaca.....	94	58	12
One adult male from Guerrero.....	94	58	11
Five adult males from Sonora.....	90.5	60.5	10.8
One adult male from Tepic.....	91.5	62	11
Seven adult males from Yucatan.....	89.2	58.6	10.9
One adult male from Honduras.....	97	52.5	11.5
Three adult males from Salvador.....	93	57.5	11.2
One adult male from Nicaragua.....	95.5	59.5	11
Three adult males from Costa Rica.....	95.2	59	11.5
Six adult males from Colombia (Bonda, Santa Marta)= <i>G. b.</i> .....?	94.1	59.2	11.8
One adult male from Venezuela (Puerto Cabello)= <i>G. b.</i> .....?	91	54	11.5
One adult male from Margarita Island= <i>G. b.</i> .....?	96	62.5	13
Three adult males from Trinidad= <i>G. b. phalaenoides</i> .....	97.5	59.5	11.3
Three adult males from Peru (Monocucho).....	93.8	63.7	10.8
One adult male from s. w. Brazil (Chapada, Mattogrosso)= <i>G. b.</i> .....?	94	58	10.5
FEMALES.			
Six adult females from Texas.....	97.2	63.8	11.5
Two adult females from Vera Cruz.....	96	62.2	12
One adult female from Jalisco.....	95.5	58	10.5
One adult female from Sinaloa.....	94	62.5	11
Two adult females from Sonora.....	97.2	65.5	11
One adult female from Arizona.....	97	67	11
Two adult females from Yucatan.....	94.7	62.2	11.7
Two adult females from Salvador.....	100	62	12.2
Four adult females from Costa Rica.....	98.2	59.6	12
One adult female from Venezuela (Rio Aurare)= <i>G. b.</i> .....?	97.5	61	12.5
One adult female from Peru (Hacienda Limon)= <i>G. b.</i> .....?	98	66	11.5
One adult female from s. w. Brazil (Chapada, Mattogrosso).....	97.5	65	11.5

Some of the specimens from Yucatan have very narrow streaks on the under parts but others are quite normal in this respect.



County, in oak belt), and southward through Mexico, in States of Sonora (Álamos; Senoyta; Caborca), Sinaloa (Mazatlán; Presidio de Mazatlán; Escuinapa; Mount Lisiarraga, 5,500 feet), Nuevo León (Rio Salada; Rio Camacho), Tamaulipas (Tampico; Victoria; Jimenez; Matamoros; Encinál; Cañon de los Caballeros; Forlón; Rio Martinez; Rio de la Cruz; Guiaves; Santa Leonora), San Luís Potosí (Vallés), Jalisco (Ojo de Agua; Tuxpán; Autlán; Las Peñas), Colima (Manzanillo; Colima), Michoacán (Volcán de Jorulla; near Ahuacana), Guerrero (Acapulco; Apipiluluca; La Unión; Papayo; La Lagunilla), Mexico (Mexcaltitán), Vera Cruz (Miradór; Potrero, near Miradór; Orizaba; Córdova; Plan del Rio; Santa Maria; Cate-maco; Chichicaxtla; Motzorongo; Pasa Nueva; Otatitlán; Atoyác; Misantla; Laguna Verde), Puebla (Metlatoyuca; Chietla), Oaxaca (Tehuántepec City; Santa Efigénia; Puerto Angel; Tequisitlán; Hui-lótepec; Tapaná; Tapanátepec; Sierra de Santo Domingo), Tabasco (Frontera; Teapa), Chiapas (Tonalá; Tapachula; Huehuetán; Tuxtla Gutierrez; Jiquipilas; Gineta Mountains), Campeche (Apazote), and Yucatan (Mérida; Chichen-Itza; Tunkas; Temáx; Tabí; Peto; Izamál; Buctzotz; Quintana-Roo; La Vega; San Felipe; Cozumél Island), and through Guatemala (Dueñas; San Gerónimo; Cobán; Laguna; Volcán de Agua; El Paraiso; El Rancho; Villa Nueva; near Patulúl, 1,800 feet), Salvador (San Salvador; Lake Ilo Pango), British Honduras (Southern Pine Ridge), Honduras (Comayagua; Rio Segóvia), Nicaragua (Chontales; Quilali, 1,800 feet) and Costa Rica (San José; La Palma de San José; Rio Maria Aguilar; San Juan; Monte Redondo; Cartago; Carrillo; Alajuela; Bolsón; Bebedero; Salistrál) to Panamá (Calobre and Santa Fé, Veragua; Natá, Coclé).

*Athene infuscata* (not *Strix infuscata* Temminck) SCLATER, Proc. Zool. Soc. Lond., 1856, 285 (Cordova, Vera Cruz; crit.).

*Glaucidium infuscatum* SCLATER and SALVIN, Ibis, 1859, 220 (Laguna, Guatemala).—TAYLOR, Ibis, 1860, 226 (Comayagua, Honduras).—LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 207 (Merida, Yucatan).

*Glaucidium jardinii* (not *Phalaenopsis jardinii* Bonaparte) SCLATER and SALVIN, Ibis, 1859, 220 (Guatemala).

*Glaucidium gnoma* (not of Wagler) CABANIS, Journ. für Orn., 1862, 336 (Costa Rica; crit.); 1869, 205 (Costa Rica; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 132 (San Jose, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 366 (Costa Rica).

[*Glaucidium infuscatum*] b. var. *gnoma* RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 93, 103 (Panama to Rio Grande and Mazatlan; monogr.).

*Glaucidium infuscatum* var. *gnoma* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 81.—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 298 (Mazatlan, Sinaloa; Colima).

*Glaucidium phalaenoides* (not *Strix phalaenoides* Daudin) SALVIN, Proc. Zool. Soc. Lond., 1870, 217 (Calobre, Veragua, Panama); Ibis, 1889, 374 (Cozumel I., Yucatan; crit.).—SCLATER Ibis, 1873, 373 (Chontales, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 192; v. 1883, 501 (San José, Costa Rica); Nom. N. Am. Birds, 1881, no. 410.—BOUCARD, Proc. Zool. Soc. Lond., 1883, 456

(Yucatan; habits).—STEPHENS, Auk, ii, 1885, 231 (Caborca, Sonora).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 380.—SCOTT, Auk, iii, 1886, 424 (Tucson, Arizona).—ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 125 (Cartago and Alajuela, Costa Rica).—BENDIRE, Auk, v, 1888, 371 (Rillito Creek, near Tucson, Arizona; habits; notes); Life Hist. N. Am. Birds, (i), 1892, 409, pl. 12, fig. 17 (egg).—SENNETT, Auk, vi, 1889, 70 (near Victoria, Tamaulipas; descr. eggs).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 205 (Tunkas, Yucatan).—CHERRIE, Auk, ix, 1892, 327 (San José, Costa Rica; habits).—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 286 (Chichen-Itza, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 33 (Rio Salado and Rio Camacho, Nuevo Leon; Sierra Madre above Victoria and Cañon de los Caballeros, Tamaulipas; Misantla, Cordova, Orizaba, Colipa Laguna Verde, Atoyac, etc., Vera Cruz; Chietla, Puebla; Tuxpan, Autlan and Las Peñas, Jalisco; Mazatlan and Presidio de Mazatlan, Sinaloa; Colima, Tapanatepec, Santa Efigenia, and Sierra Santo Domingo, Oaxaca; Gineta Mountains, Tonalá, Tuxtla, and Tapachula, Chiapas; Teapa, Tabasco; Merida, Peto, Izamal, Temax, Buctzotz, Tunkas, Tabi, and Cozumel I., Yucatan; southern Pine Ridge, Brit. Honduras; Laguna, San Geronimo, Dueñas, Volcan de Agua, and El Paraiso, Guatemala; Rio Segovia, Honduras; Chontales, Nicaragua; San José, Salitral, Alajuela, and Cartago, Costa Rica; Calobre and Santa Fé de Veragua, Panama).—VISHER, Auk, xxvii, 1910, 281 (Mts. of Pima Co., Arizona, in oak belt).

[*Glaucidium phalaenoides*] RIDGWAY, Man. N. Am. Birds, 1887, 266.

[*Glaucidium phalaenoides*] SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.

*Glaucidium phalaenoides* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 178.

[*Glaucidium ferrugineum* (not *Strix ferruginea* Maximilian) COUES, Key N. Am. Birds, 2d ed., 1884, 207.

[*Glaucidium ferrugineum*] COUES, Key N. Am. Birds, 1872, 207.

*Glaucidium ferrugineum* COUES, Am. Nat., vi, 1872, 370 (Tucson, Arizona); Check List, 1873, no. 330; 2d ed., 1882, no. 485; Birds Northwest, 1874, 318, footnote.—RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 100, part (monogr.; Mazatlan, Sinaloa; La Palma and San José, Costa Rica; descr.); in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 85, part; special ed., 1875, pl. facing p. 81; Ibis, 1876, 15 (crit.).—COUES, Check List, 1873, no. 330.—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 279 (Mazatlan); Bull. U. S. Nat. Mus., no. 4, 1876, 37 (Santa Efigenia and Tehuantepec City, Oaxaca; Gineta Mts., Chiapas).—COUES and SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., iv, no. 1, 1878, 40 (Hidalgo, Texas, descr.); v, no. 3, 1879, 418 (Lomita Ranch, Texas, breeding; synonymy).—BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 27 (Camp Lowell, Arizona).

*Glaucidium ridgwayi* SHARPE, Ibis, 3rd ser., v, Jan., 1875, 55, in text, 58 (Mexico; coll. Brit. Mus.).

[*Glaucidium ferox*] subsp. *γ*. *Glaucidium ridgwayi* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 205.

[*Glaucidium*] *ridgwayi* SHARPE, Hand-list, i, 1899, 298.

*Glaucidium phalaenoides ridgwayi* MILLER (W. DeW.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 346 (Escuinapa, etc., s. Sinaloa; crit.).—COLE, Bull. Mus. Comp. Zool., i, 1906, 124 (Chichen-Itza, Yucatan).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 478 (San José, Carrillo, Bolson, and Bebedero, Costa Rica).—PHILLIPS, Auk, xxviii, 1911, 77 (Matamoros, Rio Martinez, Santa Leonora, Rio de la Cruz, and Guiaves, Tamaulipas).

*Glaucidium brasilianum ridgwayi* DEARBORN, Pub. 125, Field Mus. N. H., Nov., 1907, 84 (El Rancho and Patulul, Guatemala; crit.).

## GLAUCIDIUM SIJU SIJU (D'Orbigny).

## CUBAN PYGMY OWL.

*Grayish brown phase.*

*Adults (sexes alike).*—General color of upper parts grayish brown (hair brown to sepia), interrupted by a conspicuous collar of light cinnamon across lower hindneck, the feathers of this collar white basally and tipped with brown; on each side of nape, bordering anterior edge of the cinnamonous collar, a more or less distinct transverse spot or blotch of black; pileum and nape thickly dotted with pale dull buff or buffy white, the small spots varying from nearly circular to guttate in form; back, scapulars, and rump rather broadly and distantly barred with pale cinnamon and white, the bars largest on scapulars, smaller and mostly concealed on interscapulars and rump; wing-coverts sparsely flecked with small spots of pale cinnamon, the outer webs of distal middle and greater coverts with large terminal spots of white; secondaries narrowly banded (more or less distinctly) with lighter brown, the bands passing into white on edges of the feathers; primaries less distinctly banded with lighter brown, the longer quills with two or three white spots on edge near point of emargination; tail crossed by about six narrow bands, these white (or mostly white) on middle rectrices, light cinnamon-brown passing into white on edges of both webs on other rectrices; "eyebrow" (superciliary region), lores, orbital region, and auricular region dull white, the last rather broadly barred with brown, the loreal feathers with conspicuous black bristly shafts; malar region, subauricular region, and chin immaculate white; a band of pale cinnamon, sometimes barred (more or less) with brown, across middle of throat; foreneck, and median line of chest, breast, and abdomen immaculate white; sides of chest light to pale cinnamon broadly barred with brown; sides of breast, sides, and flanks white, usually more or less suffused with pale cinnamon-buff, spotted transversely or irregularly with light cinnamon and brown; thighs light to pale cinnamon, usually immaculate, or nearly so; tarsi dull white, usually more or less flecked with brown; under tail-coverts white, the longer ones usually with a small subterminal mesial streak of brown; under wing-coverts white or buffy white, with a more or less distinct longitudinal series of dusky brown streaks running parallel with edge of wing; inner webs of remiges mostly white proximally, plain grayish brown distally, the white increasing in extent from the outermost primaries inwardly; bill pale dull grayish yellow, sometimes darker basally; iris lemon yellow; toes dull yellowish (pale yellowish brown in dried skins).

*Young.*—Similar to adults, but pileum and nape mostly plain grayish brown (only the forehead marked with a few paler dots or streaks), and texture of plumage softer.



*Rufescent phase.*

Similar to the grayish brown phase but the general color of upper parts much browner (natal brown to deep dull verona brown), and more uniform, the back and inner scapulars often plain brown or with the transverse spots or bars mostly concealed, the markings on pileum and nape much less distinct, pale cinnamon, usually more streak-like, the throat-collar, sides of breast, and spots on sides, etc., more rufescent (sometimes clear sayal brown).

*Adult male*.—Length (skins), 142–168 (151); wing, 87–92.5 (91.4); tail, 54–60 (56.4); culmen (from cere), 10–12 (10.9).<sup>a</sup>

*Adult female*.—Length (skins), 158–184 (172); wing, 97–104 (99.6); tail, 59.5–67 (63.4); culmen (from cere), 11.5–13 (12.1).<sup>a</sup>

Island of Cuba (Baracoa; Cabañas; El Guamá; Guamá; Mariél; Guantánamo Bay; Consolación del Sur; Fermina; Remedios).

*Noctua siju* D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Aves, 1839, 41, pl. 3 (Cuba); French ed., p. 33.

*Noctua seju* D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Aves, 1839, pl. 3.

*A[thene] siju* GRAY, Gen. Birds, i, 1845, 35.

*Athene siju* CASSIN, Cat. Strig. Mus. Ac. Nat. Sci. Phila., 1849, 13.

[*Athene*] *siju* GRAY, Hand-list, i, 1869, 42, no. 431.

[*Nyctale*] *siju* BONAPARTE, Consp. Av., i, 1850, 54.

*Nyctale siju* STRICKLAND, Orn. Syn., i, 1855, 177.

*Glaucidium siju* CABANIS, Journ. für Orn., 1855, 465.—LAWRENCE, Ann. Lyc. N. H., vii, 1860, 259 (synonymy; descr.; crit.).—ALBRECHT, Journ. für Orn., 1861, 202.—GUNDLACH, Journ. für Orn., 1861, 324; 1871, 268 (crit.), 375 (habits); Repert. Físico-Nat. Cuba, i, 1865, 226.—WRIGHT, Am. Nat., ii, 1868, 420.—RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 105 (monogr.; Remedios and Nueva Sofia, Cuba); Ibis, 1876, 17 (crit.).—SHARPE, Ibis, 1875, 59 (monogr.); Cat. Birds Brit. Mus., ii, 1875, 193.—CORY, Auk, iii, 1886, 470 (synonymy; descr.); Birds West Ind., 1889, 193; Cat. West Ind. Birds, 1892, 10, 100, 128.—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 296 (near Trinidad, s. Cuba; habits; crit.).—MENECAUX, Rev. Franç. d'Orn., no. 2, 1909, 23 (Figuabas, e. Cuba).

[*Glaucidium*] *siju* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117.—CORY, List Birds West Ind., 1885, 21.—SHARPE, Hand-list, i, 1899, 298.

*G[laucidium] siju* CABANIS, Journ. für Orn., 1869, 207 (descr.; syn.).—RIDGWAY, Proc. Bost. Soc. N. H., xvi, 1873, 94 (descr.); Ibis, 1876, 12 (diagnosis).

*Glaucidium havanense* KAUP, Jardine's Contr. Orn., 1852, 104 (Cuba; ex *Strix havanensis* Lichtenstein, manuscript; coll. Berlin Mus.).

*Scops asio* (not *Strix asio* Linnæus) GUNDLACH, Journ. für Orn., 1861, 403 (Cuba).

**GLAUCIDIUM SIJU VITTATUM** Ridgway.<sup>b</sup>**ISLE OF PINES PYGMY OWL.**

Similar to *G. s. siju* but larger; general color of upper parts decidedly grayer and much more generally and conspicuously barred,

<sup>a</sup> Seven specimens.

<sup>b</sup> New subspecies. (Type no. 172762, coll. U. S. Nat. Mus., Nueva Gerona, Isle of Pines, June 30, 1900; Palmer and Riley.)

the interscapular region, as well as scapulars, sometimes crossed with broad and regular bars of dull brownish white, and spots on under parts relatively larger, darker, and less rufescent or cinnamomeous.

*Adult male*.—Length (skins), 171; wing, 94.5; tail, 61.5; culmen (from cere), 11.5.<sup>a</sup>

*Adult female*.—Length (skins), 182–189 (185); wing, 101.5–109.5 (105); tail, 68.5–73 (70.5); culmen (from cere), 12–12.5 (12.2).<sup>b</sup>

Isle of Pines, Cuba (Nueva Gerona).

*Glaucidium siju* (not *Noctua siju* D'Orbigny) BANGS and ZAPPEY, Am. Nat., xxxix, 1905, 202 (Isle of Pines, Cuba).

### Genus MICROPALLAS Coues.

*Micrathene* (not *Micrathena* Sundevall, 1833) COUES, Proc. Ac. Nat. Sci. Phila., xviii, 1866, 51. (Type, by original designation, *Athene whitneyi* Cooper.)

*Micropallas* COUES, Auk, vi, Jan., 1889, 71, in text. (New name to replace *Micrathene* Coues, preoccupied.)

Very small,<sup>c</sup> lightly built, Bubonidæ (wing 101.6–112), with the small circular nostril opening near center of the inflated (semibulbous) cere, head without ear-tufts, tail less than half as long as wing and composed of only ten rectrices, and with the tarsus scantily haired or bristled (not feathered).

Bill relatively small and weak, rather compressed; top of cere less than half as long as chord of culmen, very broad, arched anteriorly. Nostril very small, circular, opening near center of the inflated (semibulbous) cere. External ear-openings small, ovate, or pyriform, simple, symmetrical. Wing rather long, with longest primaries exceeding distal secondaries by nearly one-third the total length of wing; seventh and eighth, or sixth, seventh, and eighth,<sup>d</sup> primaries longest, the tenth (apparent outermost) slightly shorter than second;<sup>e</sup> four outer primaries with inner webs sinuated (but sinuation very distinct only on two outermost); secondaries thirteen. Tail short (less than half as long as wing), truncate or very slightly rounded, consisting of only ten rectrices. Tarsus about as long as middle toe with claw, scantily covered (all round) with short hairs or bristles (clothed with short feathers on extreme upper portion), the toes sparsely bristled.

*Coloration*.—Above grayish or brownish, finely mottled with darker, and indistinctly speckled with pale rusty; an interrupted whitish collar across hindneck; outer webs of outermost scapulars white; wings spotted with whitish and pale rusty; tail brownish, crossed by 5–6 narrow, usually interrupted, bands of pale brownish or rusty;

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<sup>a</sup> One specimen.

<sup>b</sup> Three specimens.

<sup>c</sup> The smallest of known Striges.

<sup>d</sup> Third and fourth, or third, fourth, and fifth, from outside.

<sup>e</sup> Ninth from outside.

eyebrows, lores, and "cravat" under chin white; lower parts white, marked with ragged, rather longitudinal, blotches of pale brownish or rusty, finely mottled with darker.

*Range*.—Desert region of southwestern United States and northwestern and central Mexico; Socorro Island, Revillagigedo group, off western Mexico. (Two species.)

KEY TO THE SPECIES AND SUBSPECIES OF MICROPALLAS.

a. General color of upper parts brownish gray or grayish brown; lighter bands on tail narrower, much paler buffy (white on inner webs); under parts with much more of white. (*Micropallas whitneyi*.)

b. Upper parts browner; under parts conspicuously blotched with cinnamon. (Southeastern California to southwestern New Mexico and Sonora.)

***Micropallas whitneyi whitneyi* (p. 807).**

bb. Upper parts grayer; under parts not conspicuously (often not at all) blotched with cinnamon.

c. Paler, especially the markings on under parts, which have relatively less of white; wing shorter (averaging 105.5 in male). (Southern Lower California.)

***Micropallas whitneyi sanfordi* (p. 809).**

cc. Darker, especially the markings on under parts, which have relatively more of white; wing longer (averaging 109.5 in male). (Lower Rio Grande Valley; south to east-central Mexico?)

***Micropallas whitneyi idoneus* (p. 810).**

aa. General color of upper parts olive-brown; lighter bands on tail broader, deep cinnamon-buff; under parts with much less of white. (Socorro Island, western Mexico.).....***Micropallas graysoni* (p. 810)**

**MICROPALLAS WHITNEYI WHITNEYI (Cooper).**

**ELF OWL.**

*Grayer phase.*

*Adults (sexes alike)*.—General color of upper parts brownish gray to grayish brown, the pileum, hindneck, back, scapulars, rump, upper tail-coverts, and lesser wing-coverts with more or less distinct small irregular spots of buff or pale tawny, these larger and deeper pale tawny or cinnamon-buff on forehead; an interrupted narrow collar of white across lower hindneck; outer webs of scapulars mostly white, margined terminally with blackish; middle and greater wing-coverts with a large, semi-ovoid spot of white on terminal or subterminal portion of outer web; secondaries crossed by about five series of semicircular spots of pale cinnamon-buff, these passing into white on outer edge; primary coverts with three series of dull cinnamon-buff spots; outer webs of primaries with about six conspicuous spots of cinnamon-buff (those on distal primaries more or less extensively white exteriorly), these not touching shafts; tail crossed by about four or five narrow, interrupted bands of pale brownish buffy or buffy and white, these not reaching shaft on either web; "eyebrow" (superciliary region) white, the feathers narrowly tipped with black; "face" (loral, suborbital, and auricular regions) cinnamon to cinnamon-buff, the last sometimes partly dull rusty whitish; a white malar or



subauricular spot, margined posteriorly by a blackish bar; throat cinnamon to cinnamon-buff, this extended laterally to behind the black post-malar bar, where sometimes barred with blackish; rest of under parts a confused mixture of white, grayish, and dull light cinnamon or light buffy brown, the white predominating posteriorly, the grayish and cinnamon prevailing anteriorly, the colored areas narrowly and irregularly barred with dusky; under tail-coverts white, with subterminal irregular spots of pale buffy brown or narrow mesial streaks of dusky; under wing-coverts white, suffused with pale buffy brown and irregularly spotted with deep grayish brown, the edge of wing, however, immaculate white; under surface of remiges with broad bars or transverse spots of yellowish white, except on distal portion of larger and outermost primaries; bill pale horn color (in dried skins) with yellowish tomia; iris lemon yellow.

*Young*.—Similar to adults but pileum nearly immaculate deep brownish gray, and without any cinnamon-buff on face or throat, or buffy brown on under parts, the latter irregularly marbled or clouded with white and light brownish gray narrowly barred with darker.

*Brown phase.<sup>a</sup>*

Much browner than the grayish (usual) phase, the general color of the upper parts nearly snuff brown; otherwise not different, the pattern of coloration being identical.

*Adult male*.—Length (skins), 124–135 (129); wing, 105–115 (110.7); tail, 46.5–53.5 (49.7); culmen, from cere, 8.5–9.5 (9.1).<sup>b</sup>

*Adult female*.—Length (skins), 124–139 (132); wing, 106.5–112 (108.9); tail, 45–51 (47.2); culmen, from cere, 8–9.5 (8.8).<sup>c</sup>

<sup>a</sup> This phase is so exceptional that it is represented, in its extreme development, by only one specimen in a series of fifty-three adults, the specimen in question being the type, from Fort Mojave, Arizona.

<sup>b</sup> Seven specimens from Arizona.

<sup>c</sup> Ten specimens (nine from Arizona).

Locality.	Wing.	Tail.	Culmen, from cere.
MALES.			
Seven adult males from Arizona.....	110.7	49.7	9.1
Two adult males from Puebla, Mexico ( <i>M. w. idoneus</i> ?).....	113.8	49.9	8.7
Five adult males from southern Lower California ( <i>M. w. sanfordi</i> ).....	105.5	50	8.5
Two adult males from southern Texas ( <i>M. w. idoneus</i> ).....	109.5	49.7	8.7
One adult male from Socorro Island ( <i>M. graysoni</i> ).....	106.5	51.5	8.5
FEMALES.			
Nine adult females from Arizona.....	109.2	47.4	8.8
One adult female from southern California (Kern County).....	106.5	46	8.5
Five adult females from southern Lower California ( <i>M. w. sanfordi</i> ).....	104.9	49.2	8.7
Two adult females from Socorro Island ( <i>M. graysoni</i> ).....	103	46.7	8.7
SEX UNKNOWN.			
One adult from Guanajuato, Mexico ( <i>M. w. idoneus</i> ?).....	106.5	49	8.5

Desert areas of southeastern California (San Bernardino County; Kern County?; Whetstone Mountains; Colorado River), Arizona (Fort Mojave; Fort Lowell; Tucson; Rillito Creek, near Tucson; Fuller's Ranch; Big Sandy Creek; Benson; Dragoon Mountains; Santa Cruz River, Pima County; Pinal County), southwestern New Mexico (Apache, Grant County), and Sonora (Cerro Blanco).

*Athene whitneyi* COOPER, Proc. Calif. Ac. Sci., ii, 1861, 118 (Ft. Mojave, Arizona; coll. Calif. Geol. Survey).—COUES, Ibis, 1866, 260, in text.

[*Athene*] *whitneyi* GRAY, Hand-list, i, 1869, 43, no. 435.

*Micrathene whitneyi* COUES, Proc. Ac. Nat. Sci. Phila., 1866, 51 (Ft. Mojave, Arizona); Check List, 1873, no. 331; Birds Northwest, 1874, 320.—ELLIOT, Illustr. New and Unfig. Am. Birds, i, 1868, pl. 29 and text.—COOPER, Orn. Calif., 1870, 442 (Ft. Mojave, Arizona).—RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 87, part; Am. Nat., viii, 1874, 239 (Rillito Creek, near Tucson, Arizona); Proc. U. S. Nat. Mus., iii, 1880, 192; Nom. N. Am. Birds, 1881, no. 411.—SHARPE, Cat. Birds Brit. Mus., ii, 1875, 224.—BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 27 (Camp Lowell, Arizona; descr. young, nest, and eggs, etc.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 381, part.—SCOTT, Auk, iii, 1886, 424 (Pima and Pinal counties, Arizona).

[*Micrathene*] *whitneyi* COUES, Key N. Am. Birds, 1872, 207, part.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117, part.

[*Micrathene*] *whitneyi* COUES, Key N. Am. Birds, 2d ed., 1884, 576, part.—RIDGWAY, Man. N. Am. Birds, 1887, 267, part.

*Micropallas whitneyi* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, [March] 1889, 21, part; Check List, abridged ed., 1889, and 2d ed., 1895, no. 381, part; 3d ed., 1910, 178, part.—ANTHONY, Auk, ix, 1892, 362 (Apache, s. w. New Mexico).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 411, pl. 12, fig. 13 (egg).—RIDGWAY, Condor, iv, 1902, 18 (Kern Co., California, May 10, 1882).—LOOMIS, Auk, xix, 1902, 80 (San Bernardino Co., California, April 20, 1898).—BROWN (H.), Auk, xx, 1903, 43, 44 (Colorado Valley, Arizona).—SMITH (A. P.), Condor, ix, 1907, 197 (Whetstone Mts., California, up to 5,000 ft.).—VISHER, Auk, xxvii, 1910, 281 (Pima Co., Arizona).

[*Micropallas*] *whitneyi* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 267, part.

[*Micropallas*] *whitneyi* SHARPE, Hand-list, i, 1899, 299, part.

#### MICROPALLAS WHITNEYI SANFORDI Ridgway.<sup>a</sup>

##### SANFORD'S ELF OWL.

Similar to *M. w. whitneyi*, but much grayer above and (in the gray phase, at least) with much less of cinnamon-buff on face and little if any rusty brown or cinnamon on under parts; gray phase with ground color of upper parts between mouse gray and hair brown, without distinct, if any, darker vermiculations; brown phase similar in coloration to the grayer phase of *M. w. whitneyi* but slightly darker; wing averaging decidedly shorter, tail averaging longer.

<sup>a</sup> New subspecies. (Type, no. 234166, adult male, coll. U. S. Nat. Mus., Miraflores, Lower California, June 24, 1912; W. W. Brown, jr. Presented by Dr. L. C. Sanford.)

*Adult male*.—Length (skins), 124–142 (133); wing, 99–109.5 (105.5); tail, 47.5–53 (50); culmen, from cere, 8–9 (8.5).<sup>a</sup>

*Adult female*.—Length (skins), 115–139 (129); wing, 102–109.2 (104.9); tail, 45.5–52.5 (49.2); culmen, from cere, 8–9.5 (8.7).<sup>a</sup>

Southern Lower California (Miraflores; Victoria Mountains).

*Micrathene whitneyi* (not *Athene whitneyi* Cooper) BELDING, Proc. U. S. Nat. Mus., v, 1883, 549 (Miraflores, s. Lower California; notes).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 381, part.

*M[icrathene] whitneyi* COUES, Key N. Am. Birds, 2d ed., 1884, 576, part.—RIDGWAY, Man. N. Am. Birds, 1887, 267, part.

*Micropallas whitneyi* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Suppl. to Check List, 1889, 21, part; Check List, abridged ed., 1889, and 2d ed., 1895, no. 381, part; 3d ed., 1910, 178, part.—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, ii, 1889, 285 (Victoria Mts. and Miraflores, s. Lower California).—BREWSTER, Bull. Mus. Comp. Zool., xli, pt. i, 1902, 99 (Miraflores, Lower California; crit.).

### MICROPALLAS WHITNEYI IDONEUS Ridgway.<sup>b</sup>

#### TEXAN ELF OWL.

Similar to *M. w. sanfordi* in grayness of upper parts and absence of distinct cinnamonaceous blotches on under parts, but under parts with more white and with markings darker.

*Adult male*.—Length (skins), 136–139 (137.5); wing, 108.5–110.5 (109.5); tail, 49.5–50 (49.7); culmen, from cere, 8.5–9 (8.7).<sup>c</sup>

Lower Rio Grande Valley in Texas (Hidalgo, Hidalgo County; Brownsville, Cameron County); south to Puebla (San Salvador el Verde; Tehuacán), Valley of Mexico, and Guanajuato, east-central Mexico? <sup>d</sup>

(?) *Micrathene whitneyi* (not *Athene whitneyi* Cooper?) FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 165 (San Salvador el Verde, Puebla; Guanajuato).

*Micropallas whitneyi* SENNETT, Auk, vi, 1889, 276 (Hidalgo, Texas, April 5, 1889).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 37, part (Guanajuato; Valley of Mexico; San Salvador el Verde, Puebla).

### MICROPALLAS GRAYSONI (Ridgway).

#### SOCORRO ELF OWL.

Similar to *M. whitneyi*, but coloration much browner (the plumage without any gray admixture), "eyebrows" and lores cinnamon-buff (instead of white), subauricular or post-malar patch buffy (instead

<sup>a</sup> Five specimens.

<sup>b</sup> New subspecies. (Type, no. 80966, adult male, coll. American Museum, five miles from Hidalgo, Texas, April 5, 1889; F. B. Armstrong.)

<sup>c</sup> Two specimens.

<sup>d</sup> Specimens, representing each of the above-mentioned Mexican localities, may be referable to this form. One from Puebla is somewhat darker, however, than the two Texan examples; but without a larger series of specimens the status of Mexican birds can not be determined. (Measurements are given on p. 808.)



of white) and without black posterior border, lighter tail-bands much broader, and pale bands on inner webs of remiges indistinct.

*Adults (sexes alike).*—Above light bistre or deep snuff brown, the forehead and crown with rather large (mostly roundish, guttate, or cordate) spots of ochraceous-tawny; a distinct but broken collar of white across lower hindneck; back, scapulars, wing-coverts, and rump irregularly spotted with light ochraceous-tawny, these markings less distinct on back and rump; outermost scapulars largely white, this mostly in form of large <-shaped markings; middle and greater wing-coverts with a large terminal spot of buffy white, mostly on outer web, these white spots preceded by a dusky bar; remiges crossed by transverse series of large cinnamon-buff spots, these largest and most distinct on primaries; tail crossed by about six interrupted bands of cinnamon-buff or light cinnamon; "eyebrow" and lores cinnamon-buff, the suborbital and auricular regions similar but deeper in color (more tawny); a post-malar or subauricular bar of pale buff, this bordered posteriorly by a space of clear tawny (without black), which extends entirely across throat; rest of under parts mostly light cinnamon-brown (or sayal brown), irregularly barred with dusky, but the general brown color broken by an irregular admixture of dull white, which is most evident on center of breast and upper abdomen; under tail-coverts dull buffy white with mesial sagittate or cuneate streak of dusky or brown and dusky; under wing-coverts pale buffy suffused with cinnamon-buff and tawny, especially toward edge of wing, where streaked and spotted with dusky; inner webs of remiges grayish brown, the inner webs of secondaries with distinct transverse spots of dull white, the primaries with indistinct transverse spots of paler grayish brown (except on distal portion of longer and outermost quills); bill horn color (in dried skins), with yellowish tomtia.

*Adult male.*—Length (skin), 132; wing, 106.5; tail, 51.5; culmen, from cere, 8.5.<sup>a</sup>

*Adult female.*—Length (skins), 137–138 (137.5); wing, 102–104 (103); tail, 44.5–49 (46.7); culmen, from cere, 8.5–9 (8.7).<sup>b</sup>

*Micrathene whitneyi* (not *Athene whitneyi* Cooper) GRAYSON, Proc. Bost. Soc. N. H., xiv, 1871, 300 (Socorro Island).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 297 (Socorro I.; habits).—RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 87, part (Socorro I.).

[*Micrathene*] *whitneyi* COUES, Key N. Am. Birds, 1872, 207, part (Socorro I.).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117, part (Socorro I.).

*Micrathene graysoni* RIDGWAY, Auk, iii, July, 1886, 333 (Socorro Island, Revilagigedo group, w. Mexico; coll. U. S. Nat. Mus.); Proc. U. S. Nat. Mus., ix, 1886, 166 (full descr.; synonymy).—ANTHONY, Auk, xv, 1898, 317 (Socorro I.).

<sup>a</sup> One specimen.

<sup>b</sup> Two specimen.

*M[icrathene] graysoni* RIDGWAY, Man. N. Am. Birds, 1887, 267.

*M[icropallas] graysoni* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 267.

*Micropallas graysoni* SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 38 (Socorro I.).

[*Micropallas*] *socorroensis* [lapsus] SHARPE, Hand-list, i, 1899, 299 (Socorro I.; nomen nudum).

### Genus SPEOTYTO Gloger.

*Speotyto* GLOGER, Hand-und Hilfsbuch der Naturg., 1842, 226. (Type, *Strix cunicularia* Molina.)

*Pholeoptynx* KAUP, Isis, 1848, 769. (Type, *Strix cunicularia* Molina.)

Small terrestrial Bubonidæ (wing about 147–190 mm.) with nostril near center of the semibulbous cere; relatively small head, without ear-tufts; small, simple, nonoperculate, symmetrical external ear-openings, and long legs (the tarsus twice as long as middle toe without claw).

Bill rather stout; top of cere less than half as long as chord of culmen, broad, depressed below the swollen nasal bulbs. Nostril small, circular, near center of the much swollen or semibulbous cere. External ear-openings small, simple, nearly oval, nonoperculate, symmetrical. Wing rather large, with longest primaries exceeding distal secondaries by nearly one-fourth the total length of wing; eighth and ninth, or seventh, eighth and ninth,<sup>a</sup> primaries longest, the tenth (apparent outermost) equal to or slightly longer than sixth;<sup>b</sup> three outer primaries with inner webs sinuated (though sometimes only the outermost very distinctly so). Tail less than half as long as wing, truncate or very slightly rounded, composed of twelve (rarely thirteen<sup>c</sup>) rectrices. Tarsus twice as long as middle toe without claw, naked behind, clothed in front with short, hair-like feathers (sometimes changing to bristles on lower portion), the upper side of toes (except terminal phalanx) scantily bristled; outer toe decidedly shorter than inner toe.

*Coloration*.—Adults brown above, spotted, barred, or otherwise variegated with dull white or buffy; under parts white or buffy broadly barred or transversely spotted with brown; superciliary region, chin and jugular area white; a gular collar of mixed brown and buffy. Young plain brown above, except wings and tail, which are marked as in adults; upper tail-coverts, large space on wing-covert area, and under parts of body plain buffy, the upper throat and a jugular area plain white.

*Range*.—Treeless districts of North, Middle, and South America; north to British Columbia (interior) and Manitoba, east to the Great

<sup>a</sup> Second and third or second, third and fourth, from outside.

<sup>b</sup> Fifth from outside.

<sup>c</sup> According to Hubert Lyman Clark, Proc. U. S. Nat. Mus., xvii, 1895, 562.

Plains; also in southern Florida, Bahamas, Haiti, Antigua, Nevis, Guadeloupe, and Margarita Island. (About eight forms, representing three species.)

KEY TO THE SPECIES AND SUBSPECIES OF *SPEOTYTO*.

- a. Coloration lighter, the ground color of upper parts wood brown to warm sepia, with lighter spots averaging larger, more numerous, and pale buffy or whitish; a more or less conspicuous superciliary stripe of whitish; ground color of under parts less deeply buffy; lighter spots on outer webs of primaries larger; second, or second and third, primaries usually longest.
- b. Under wing coverts wholly immaculate buff or (rarely) with a few narrow streaks of brown on central or inner portion of the wing-lining area; ground color of under parts more pronouncedly buffy, that of upper parts more buffy brown with lighter spots more buffy. (*Speotyto cunicularia*.)
- c. Larger (wing averaging more than 179); under wing-coverts sometimes with a few brown streaks; buffy spots on upper parts relatively larger. (Southern South America.)..... *Speotyto cunicularia cunicularia* (extralimital).<sup>a</sup>
- cc. Smaller (wing averaging less than 173); under wing-coverts always (?) wholly immaculate; buffy spots on upper parts relatively smaller, or (in *S. c. brachyptera*) wing less than 155.
- d. Wing averaging more than 164, tail averaging more than 70, tarsus averaging 43 or more; coloration darker, with lighter spots on upper parts smaller.
- e. Wing and tail longer, bill and feet smaller (wing averaging more than 170, tail averaging not less than 79, culmen, from cere, averaging not more than 14, tarsus averaging not more than 45, middle toe averaging not more than 20); coloration lighter, the under parts less buffy. (Southern British Columbia to Panama, east to eastern edge of Great Plains.)  
*Speotyto cunicularia hypogæa* (p. 814).
- ee. Wing and tail shorter, bill and feet larger (averaging, wing, less than 165, tail less than 77, culmen, from cere, 16 or more, tarsus more than 45, middle toe more than 20); coloration darker, the under parts more strongly buffy. (Clarion Island, off western Mexico.)  
*Speotyto cunicularia rostrata* (p. 820).

<sup>a</sup> *Strix cunicularia* Molina, Saggio Stor. Nat. Chili, 1782, 263, in text, 343 (Chile).—[*Strix*] *cunicularia* Gmelin, Syst. Nat., i, pt. i, 1788, 292.—*Noctua cunicularia* Darwin, Journ. Nat. 'Beagle,' 1841, 145; D'Orbigny, Voy. Amer. Mérid., Ois., 1833-44, 128; Burmeister, Syst. Ueb. Th. Bras., ii, 1856, 440; Schlegel, Mus. Pays-Bas, Striges, 1862, 30.—*Otus cunicularia* Cuvier, Règne Anim., 1829, 341.—*Surnia cunicularia* Bonaparte, Oss. Cuv. Règne Anim., 1830, 50.—[*Nyctipetes*] *cunicularia* Swainson, Classif. Birds, ii, 1837, 218.—*Athene cunicularia* Darwin, Zool. Voy. 'Beagle,' Birds 1841, 31; Kaup, Trans. Zool. Soc. Lond., iv, 1859, 211 (Sao Paulo, Brazil; monogr.).—[*Pholeoptynx*] *cunicularia* Sclater and Salvin, Nom. Av. Neotr., 1873, 117, part.—*Speotyto cunicularia* Sharpe, Cat. Birds Brit. Mus., ii, 1875, 142, part.—*Speotyto cunicularia*, var. *cunicularia* Ridgway, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 90.—(?) *Strix grallaria* Temminck, Planches Col., ii, livr. 25, Aug., 1822, pl. 146 and text (Brazil; coll. Leyden Mus.); Spix, Av. Bras., i, 1825, 21.—(?) *Noctua grallaria* Stephens, Shaw's Gen. Zool., xiii, pt. 2, 1826, 67.—*Noctua urucurea* Lesson, Traité d'Orn., livr. 2, May, 1830, 103 (Paraguay, etc.; based on *Urucuru* Azara, Apunt. Parag., ii, 211).

There are other forms in other parts of South America, but these need not be mentioned separately here.



dd. Wing averaging 147, tail 63.5, tarsus 40.7; coloration averaging lighter, with lighter spots on upper parts larger. (Margarita Island, Venezuela.)

***Speotyto cunicularia brachyptera*** (extralimital).<sup>a</sup>

bb. Under wing-coverts spotted with brown, at least toward edge of wing; ground color of under parts with less of buffy (predominantly dull white), that of upper parts less buffy brown, with lighter spots less buffy (dull white). (*Speotyto floridana*).<sup>b</sup>

c. Larger (wing averaging about 164, tail about 76, tarsus more than 43); under parts less extensively barred, and with less of white spotting or barring on chest. (Florida and Bahama Islands.)

***Speotyto floridana floridana*** (p. 820).

cc. Smaller (wing averaging about 157, tail about 73, tarsus less than 42); under parts more extensively barred, and with more white spotting or barring on chest. (Haiti.).....***Speotyto floridana dominicensis*** (p. 823).

aa. Coloration darker, the ground color of upper parts either darker or more reddish brown (light to very dark vandyke), with white spots averaging smaller, less numerous, and more buffy or cinnamonaceous; no whitish superciliary stripe; lighter spots on outer webs of primaries smaller; under parts more deeply buffy; third and fourth primaries longest. (*Speotyto guadeloupensis*.)

b. Much lighter brown above (light vandyke), the bars on under parts also lighter in color; larger (wing averaging 160, tail 79.5, culmen, from cere, 15.2, tarsus 44.2, middle toe 21.5). (Island of Guadeloupe, Lesser Antilles.)

***Speotyto guadeloupensis guadeloupensis*** (p. 824).

bb. Much darker brown above (very dark vandyke), the bars on under parts also darker; smaller (wing averaging 150, tail 73, culmen, from cere, 14.5, tarsus 37.3, middle toe 20.8). (Islands of Antigua and Nevis, Lesser Antilles.)

***Speotyto guadeloupensis amaura*** (p. 825).

## SPEOTYTO CUNICULARIA HYPÓGÆA (Bonaparte).

### BURROWING OWL.

Similar to *S. c. cunicularia*,<sup>c</sup> but averaging decidedly smaller, and buffy spots on upper parts relatively smaller.

*Adults (sexes alike).*—Above brown (buffy wood brown to deep bistre or warm sepia), spotted, more or less profusely, with pale brownish buff to dull buffy white, the spots largest on back, scapulars, and wing-coverts, where often of roundish or transversely ovate form, and on hindneck, where mostly longitudinal,<sup>d</sup> smaller on pileum,

<sup>a</sup> *Speotyto brachyptera* Richmond, Proc. U. S. Nat. Mus., xviii, no. 1093, Aug. 12, 1896, 663 (Margarita I., Venezuela; coll. U. S. Nat. Mus.).

<sup>b</sup> Considering all the facts in the case, I think it best to consider *S. floridana* and *S. guadeloupensis* as specifically distinct from *S. cunicularia*. Undoubtedly the Florida-Bahama form is much more closely related to the Haitian one (*S. f. dominicensis*) than to any other, and no doubt the Florida bird reached the peninsula via the Bahama Islands, and not from western United States or Mexico. The birds from the Lesser Antilles (*S. guadeloupensis* and *S. g. amaura*) are very different from both *S. floridana* and *S. cunicularia*, and should, in my opinion, be regarded as a distinct species.

<sup>c</sup> See p. 813.

<sup>d</sup> The form, as well as the size of the spots, varies greatly in different specimens.

where often intermixed with streaks of the same color; secondaries with the spots arranged in four or five transverse series, the outer webs of primaries with similar spots, which become larger on longer quills; tail crossed by five or six narrow, interrupted bands of pale dull buffy, usually suffused with deeper buff or cinnamon-buff, and narrowly tipped with pale buff or buffy white; a more or less distinct, sometimes rather broad, superciliary stripe of dull brownish white or pale brownish buff, the lores and suborbital region the same color but usually stained or suffused with pale brown, the former with shafts of the feathers black; auricular region brown (more or less dark), indistinctly streaked with paler or with dull brownish buffy; chin, malar region, and subauricular region immaculate dull white or buffy white, this white area extending upward at posterior end behind lower half, or more, of auricular region; throat buff, barred, more or less, with dark brown, the bars usually most developed (sometimes coalesced) on posterior portion, forming a more or less distinct transverse band, which on each side is continued upward behind the post-auricular whitish area; foreneck and upper median portion of chest immaculate buffy white; rest of under parts pale buff and dull buffy white, deeper buff, and immaculate, on femoral plumes and thighs (the feathering of tarsi, the anal region, median portion of lower abdomen, and the under tail-coverts likewise immaculate), elsewhere broadly barred with brown, the brown predominating on chest or upper breast (especially laterally), where the buff is often in form of relatively small, roundish, or sometimes even longitudinal, spots;<sup>a</sup> axillars and under wing-coverts immaculate clear buff, the under primary coverts broadly and abruptly tipped with dusky; inner webs of remiges immaculate buff proximally, banded with buff and grayish brown distally; bill dull light grayish or yellowish; iris clear lemon yellow; toes and naked part of tarsi dull grayish or horn color (in dried skins).

*Young*.—Remiges and rectrices (if developed) as in adults; pileum, hindneck, and back mostly plain light grayish brown to buffy brown; wing-coverts mostly light buff; under parts and upper tail-coverts immaculate buff, the sides of chest (sometimes whole upper chest) shaded with brown; band across throat uniform brown.

*Adult male*.—Length (skins), 200–245 (224); wing, 164.5–178 (172.3); tail, 74.5–86 (81.6); culmen, from cere, 13–15 (14.2); tarsus, 41.5–48.5 (45.3); middle toe, 19–22 (20.3).<sup>b</sup>

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<sup>a</sup> There is as much individual variation in the coloration of the under parts as in that of the upper surface; sometimes all the bands are deep brown, but not infrequently they are more rufescent, especially on the sides and flanks.

<sup>b</sup> Twenty-six specimens.

*Adult female*.—Length (skins), 205–250 (223); wing, 162.5–181 (170.3); tail, 71.5–85.5 (79); culmen, from cere, 13–15 (13.9); tarsus, 40–46.5 (43); middle toe, 18–20.5 (19.5).<sup>a</sup>

<sup>a</sup> Thirty-three specimens.

Locality.	Wing.	Tail.	Culmen, from cere.	Tarsus.	Middle toe.
MALES.					
Five adult males from Argentina, etc. ( <i>S. c. cunicularia</i> ).....	179.5	86.6	16	47.3	21.7
One adult male from Guatemala.....	162	73	14	44	19.5
One adult male from State of Mexico.....	174	81	14.5	43	21
One adult male from southern Tamaulipas.....	175	83	13.5	47	21.5
One adult male from Jalisco.....	178	77.5	14.5	46.5	21
One adult male from Colima.....	174	84.5	13.5	43	19.5
Two adult males from southern Lower California.....	169.2	83	14.2	44	19.7
Eight adult males from California.....	174.1	84	14.3	46.4	21
One adult male from Guadalupe Island, Lower California.....	173.5	82	13.5	44.5	20.5
Three adult males from Arizona (2) and New Mexico (1).....	171.7	81.3	14.5	43.8	19.5
Six adult males from Texas.....	170.7	79.2	14.2	45.4	19.9
One adult male from Wyoming.....	173	84.5	13.5	46	19
Ten adult males from Clarion Island ( <i>S. c. rostrata</i> ).....	165	76.3	16.1	47.1	21.4
One adult male from Margarita Island, Venezuela ( <i>S. c. brachyptera</i> ).....	142	63.5	13.5	40	19
FEMALES.					
Five adult females from Argentina, etc. ( <i>S. c. cunicularia</i> ).....	181	83.7	15.5	46.8	21.7
One adult female from western Panama (Chiriqui).....	173	79	13.5	43.5	20.5
Two adult females from Guatemala.....	167.7	73.2	13.7	41.2	19.5
One adult female from Yucatan.....	167.5	78	14	43	19
One adult female from Vera Cruz.....	178	79	13.5	43.5	18.5
Three adult females from Michoacan.....	166	77.2	13.5	41	19
One adult female from Jalisco.....	172.5	80	14.5	40.5	18
Two adult females from Sinaloa.....	172.5	81.2	13.7	43.5	19
One adult female from Colima.....	170.5	78	14	44	19.5
One adult female from Guadalupe Island.....	165	79	13	41.5	19
One adult female from Santa Margarita Island.....	164	74	14	43	20
One adult female from Ceralos (=Cerros?) Island.....	172	79	14.5	42	20.5
One adult female from Cape San Lucas.....	172	77	14	43	19
One adult female from San Clemente Island.....	173	81	14	44.5	19.5
Two adult females from San Benito Island.....	168.5	74	13	44.7	19
Two adult females from New Mexico.....	167	78.5	14	43	19.2
Six adult females from Texas.....	171.2	80.2	13.9	40.6	19.7
One adult female from Colorado.....	171	79.5	15	43	20.5
One adult female from Montana.....	170	79	14.5	46.5	19.5
One adult female from Nevada.....	166	83	14	44	20
Two adult females from Nebraska.....	181	83.5	14.5	42	20
Two adult females from Clarion Island ( <i>S. c. rostrata</i> ).....	164.2	70.2	16	45.2	20.7
One adult female from Margarita Island, Venezuela ( <i>S. c. brachyptera</i> ).....	152	63.5	14.5	41.5	18

I am not able, from the material examined, to make out any variations in the series from the continent of North America (western United States to Panama) except those which seem to be purely of an individual character.



Unforested portions of western United States and southwestern Canada, from Pacific coast (including Santa Barbara, Los Coronados, Guadalupe, and other islands) to western Minnesota (Swift County), South Dakota (Lyman County; Rosebud Reservation), Nebraska (Neligh, Antelope County), middle Kansas (Fort Hays; Sedgwick County), Texas, and southeastern Louisiana (prairies of East Feliciana and Plaquemine Counties<sup>a</sup>); north to Bellingham Bay, Washington (casual), southern British Columbia (Kamloops and Ashcroft prior to 1890; Revels Lake; Chilliwack; Vernon), southwestern Saskatchewan (breeding), and western Manitoba (40 miles northeast of Portage la Prairie; Morden; along Pipestone River on Riding Mountain); southward through Lower California to Cape San Lucas (including Cerros, Santa Magdalena, Santa Margarita, and other islands), and through Mexico, in States of Sonora (San Pedro; Bacuaché), Chihuahua (Chihuahua; Carnetes), Tamaulipas (Matamoros; Alta Mira), Coahuila (head of Las Vacas Creek), San Luís Potosí (Hacienda Angostura), Guanajuato, Zacatecas, Jalisco (La Barca; Guadalajara; Santa Ana near Zapotlán), Sinaloa (Mazatlán; Presidio de Mazatlán; Escuinapa), Colima (Armería; Plains of Colima), Michoacán (Los Reyes), Mexico (near City of Mexico; Tlalpám), Puebla, Vera Cruz (Jalapa; Orizaba; Achotál; Cofre de Perote; Playa Vicente), Oaxaca (Tehuántepec; Chimalapa; Juchitán; Caco-prieto), and Yucatán (San Ignacio), and Territory of Tepic (Ixtlán; Vente de Astillero; Tres Marias Islands), to Guatemala (Dueñas; San Gerónimo; Lanquín; Acapám; Gualán; Naranjo; El Rancho, Zacapa; Villa Nueva; Chiapám; San José); reappearing<sup>b</sup> in western Panamá (Divala, Chiriquí). Accidental in New York City and Newburyport, Massachusetts (escaped from captivity?).

*Strix cucularia* (not of Molina) BONAPARTE, Ann. Lyc. N. Y., ii, pt. i, 1826, 36; 1828, 435 (crit.); Am. Orn., i, 1825, 68, pl. 7, fig. 2.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 99, in text.—NUTTALL, Man. Orn. U. S. and Can., Land Birds, 1832, 118; 2d ed., 1840, 123.—AUDUBON, Orn. Biog., v, 1839, 264, pl. 432.

*Surnia cucularia* AUDUBON, Synopsis, 1839, 22; Birds Am., oct. ed., i, 1840, 119, pl. 31.

*Athene cucularia* BONAPARTE, Geog. and Comp. List, 1838, 6.—CASSIN, Cat. Striges Mus. Ac. Nat. Sci. Phila., 1849, 15; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 60.—BAIRD, Cat. N. Am. Birds, 1859, no. 59; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 5 (San Diego, California); Rep. Pacific R. R. Surv., x, no. 2, 1859, 13 (Uncompagne R., Utah; descr.).—KENNERLY, Rep. Pacific R. R. Surv., x, no. 3, 1859, 20 (Los Angeles, San Gabriel Valley, etc., California; habits).—HEERMANN, Rep. Pacific R. R. Surv., iv, no. 2,

<sup>a</sup> These Louisiana birds possibly *S. floridana*.

<sup>b</sup> Probably occurring, in suitable localities, also in Honduras, Nicaragua, and Costa Rica; indeed, it has already been recorded from the last-named country but without definite locality or other data, and no specimen is known to be extant.

- 1859, 33 (California; habits; descr. nest).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 157 (Santa Clara, California; Ft. Dalles, Oregon).—KAUP, Trans. Zool. Soc. Lond., iv, 1859, 201.—CANFIELD, Am. Nat., ii, 1869, 583 (biogr.).—COOPER, Orn. Calif., 1870, 437.—GRAYSON, Proc. Bost. Soc. N. H., xiv, 1872, 270 (Tres Marias Islands, w. Mexico).
- (?) [*Athene*] *cunicularia* BONAPARTE, Consp. Av., i, 1850, 38, part.
- Uhula cunicularia* JARDINE, ed. Wilson's Am. Orn., iii, 1832, 325.
- Noctua cunicularia* SCHLEGEL, Mus. Pays-Bas, ii, no. 12 (Striges), 1863, 30, part; no. 36 (Revue), 1873, 27, part.
- [*Phloeoptynx*] *cunicularia* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 117, part.
- Speotyto cunicularia* SHARPE, Cat. Birds Brit. Mus., ii, 1875, 142, part (localities and references pertaining to Central and North America).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, iii, 1897, 31, part (San Pedro, Sonora; Nuevo Laredo, Nuevo Leon; Carnetas, Chihuahua; Zacatecas; Hacienda Angostura, San Luis Potosi; Tres Marias; Mazatlan and Presidio de Mazatlan, Sinaloa; Ixtlan and Venta de Astillero, Tepic; Guadalajara and Santa Ana near Zapotlan, Jalisco; Plains of Colima; Guanajuato; Jalapa, Cofre de Perote, Orizaba, and Playa Vicente, Vera Cruz; Puebla; Tehuantepec, Chimalapa, Juchitan, and Cacoprieto, Oaxaca; Chiapam, San José, Dueñas, San Geronimo, and Lanquin, Guatemala).
- Strix hypugæa* BONAPARTE, Am. Orn., i, 1825, 72 (Platte River).
- Athene hypugæa* BAIRD, in Rep. Stansbury's Surv. Great Salt Lake, 1852, 314 (Salt Lake Valley and plains east of Wahsatch Mountains); Cat. N. Am. Birds, 1859, no. 58; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 5 (Ft. Davis and Ft. Clark, Texas; Tamaulipas).—McCOWN, Ann. Lyc. N. Y., vi, 1853, 13 (Rio Grande, Texas).—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuni and Col. R., 1853, 62.—CASSIN, Illustr. Birds Calif., Tex., etc., 1854, 188; in Baird, Rep. Pacific R. R. Surv., ix, 1858, 59.—NEWBERRY, Rep. Pacific R. R. Surv., vi, chapt. ii, 1857, 77 (San Diego, Monterey, etc., California; Klamath Basin, Oregon).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 157 (35 miles west of Ft. Kearney; Ft. Benton, Montana).—COOPER, Orn. Calif., 1870, 448.
- Speotyto cunicularia hypugæa* RIDGWAY, Bull. Essex Inst., vi, Oct., 1874, 171 (Sacramento, California).
- [*Athene*] *hypogæa* BONAPARTE, Consp. Av., i, 1850, 39.—GRAY, Hand-list, i, 1869, 43, no. 437.
- Athene hypogæa* HEERMANN, Journ. Ac. Nat. Sci. Phila., ii, 1853, 260 (California).—SCLATER, Proc. Zool. Soc. Lond., 1857, 201 (Jalapa, Vera Cruz).—SALVIN, Ibis, 1865, 193 (Acapam, Guatemala).—DRESSER, Ibis, 1865, 330 (San Antonio and Eagle Pass, Texas).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 139 (Ft. Hays, Kansas; crit.).
- Ath[ene] hypogæa* MAXIMILIAN, Journ. für Orn., 1858, 28 (Missouri River; crit.).
- Surnia hypogæa* HENRY, Proc. Ac. Nat. Sci. Phila., vii, 1855, 307 (New Mexico).
- Phloeoptynx hypogæa* SCLATER, Proc. Zool. Soc. Lond., 1859, 368 (Jalapa).—SALVIN and SCLATER, Ibis, 1860, 401 (San Geronimo and Lanquin, Guatemala).—GURNEY, Cat. Birds of Prey, 1894, 41.
- [*Speotyto*] *cunicularia* var. *hypogæa* COUES, Key N. Am. Birds, 1872, 208.
- Speotyto cunicularia*, var. *hypogæa* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 90.—BENDIRE, Proc. Bost. Soc. N. H., xix, 1877, 132 (Camp Harney, Oregon; Ft. Lapwai, Idaho).
- Speotyto cunicularia* . . . var. *hypogæa* RIDGWAY, Bull. Essex Inst., v, Nov., 1873, 185 (Colorado).—COUES, Check List, 1873, no. 332.
- Speotyto cunicularia*, var. *hypogæa* ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 64 (Little Missouri R., Montana, and westward).—LAWRENCE, Mem. Bost. Soc.

N. H., ii, 1874, 297 (Tres Marias; Mazatlan, Sinaloa); Bull. U. S. Nat. Mus., no. 4, 1876, 37 (Juchitan, Oaxaca, Jan.).—DEANE, Rod and Gun, vi, May 15, 1875, 97 (Newburyport, Massachusetts, 1 spec.).—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 151 (Ft. Brown, Texas, in winter).

[*Speotyto cunicularia*, var. *hypogæa*] *c. hypogæa* COUES, Birds Northwest, 1874, 322. *Speotyto cunicularia*, *γ. hypogæa* RIDGWAY, Field and Forest, ii, 1877, 21 (Colorado); Orn. Fortieth Parallel, 1877, 573 (Sacramento and San Francisco, California; Carson City, Nevada; etc.).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 434 (Stockton, California).

*Speotyto cunicularia hypogæa* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 11, 16 (Carson Valley, Nevada); Proc. U. S. Nat. Mus., iii, 1880, 192; Nom. N. Am. Birds, 1881, no. 408.—COUES, Bull. U. S. Geol. and Geog. Surv., iv, 1878, 619 (near Frenchmans Creek and Sweet Grass Hills, Montana); Check List, 2d ed., 1882, no. 487.—NEHRING, Bull. Nutt. Orn. Club, vii, 1882, 173 (s. e. Texas).—BELDING, Proc. U. S. Nat. Mus., v, 1883, 543 (Cape San Lucas district, Lower California).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886 (and 2d ed., 1895), no. 378; 3d ed., 1910, 177.—ZELEDÓN, Anal. Mus. Nac. C. R., i, 1887, 125 (Costa Rica).—BRYANT (W. E.), Bull. Calif. Ac. Sci., ii, 1887, 284 (Guadalupe I., Lower California; habits).—ROBERTS, Auk, vii, 1890, 213 (Swift Co., w. Minnesota); in Wilcox's Hist. Becker Co., Minn., 1907, 175 (w. Minnesota).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., xiii, 1890, 140 (San Clemente I., California).—ATTWATER, Auk, ix, 1892, 234 (San Antonio, Texas, resident).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 395, pl. 12, fig. 14 (egg).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 34 (San Pedro, Sonora).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1893, 41 (at Kamloops and Ashcroft, Brit. Columbia, prior to 1890).—ANTHONY, Zöe, iv, 1893, 235 (between Tia Juana and San Telmo, Lower California).—JOUY, Proc. U. S. Nat. Mus., xvi, 1894, 787 (Hacienda Angostura, San Luis Potosi).—THORNE, Auk, xii, 1895, 214 (Ft. Keogh, Montana).—BEYER, Proc. La. Soc. Nat. for 1897-'99 (1900), 101 (prairies of East Feliciana Co., Louisiana, common, breeding).—BROOKS, Auk, xvii, 1900, 105 (British Columbia, chiefly east of Cascade Mountains).—BANGS, Auk, xviii, 1901, 358 (Divala, Chiriqui, Panama).—BREWSTER, Bull. Mus. Comp. Zool., xli, pt. i, 1902, 97 (La Paz, San José del Cabo, Cerros I., Santa Margarita I., and Magdalena I., Lower California).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 347 (Escuinapa, s. Sinaloa).—COLE, Bull. Mus. Comp. Zool., i, 1906, 145 (San Ignacio, Yucatan).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 84 (Gualan and El Rancho, Guatemala).—LARSEN, Wilson Bull., no. 60, 1907, 114 (Lyman Co., South Dakota, common).—THAYER and BANGS, Condor, ix, 1907, 137 (Rosario and San Javier, Lower California).—BENT, Auk, xxv, 1908, 26 (s. w. Saskatchewan, breeding).—LINTON, Condor, x, 1905, 84 (San Clemente I., California), 127 (Santa Cruz I.; crit.).—THAYER and BANGS, Condor, x, 1908, 104 (Guadalupe I., Lower California; crit.; habits).—EDSON, Auk, xxv, 1908, 433 (Bellingham Bay, Washington, 1 spec.).—BEYER, ALLISON, and KOPMAN, Auk, xxv, 1908, 443 (Jackson, East Feliciana Co. and Plaquemine Co., Louisiana, common).—SETON, Auk, xxv, 1908, 453 (4 miles n. w. of Portage la Prairie, Manitoba, June, 1897, May, 1899; Morden, and along Pipestone R., on Riding Mountain, Manitoba).—REAGAN, Auk, xxv, 1908, 465 (Rosebud Reservation, South Dakota, abundant).—KERMODE, Provincial Mus. Victoria, 1909, 47 (Chilliwack and Vernon, Brit. Columbia).—VAN ROSSEM, Condor, xi, 1909, 208 (Los Coronados Islands, Lower California).—PHILLIPS, Auk, xxviii, 1911, 77 (Matamoros and Alta Mira, Tamaulipas).—ISELY, Auk, xxix, 1912, 28 (Sedgwick Co., Kansas, Oct. 24, 1909).



- S[peotyto] cunicularia hypogæa* COUES, Key N. Am. Birds, 2d ed., 1884, 516.—RIDGWAY, Man. N. Am. Birds, 1887, 265.
- Speotyto hypogæa* HENSHAW, Ann. Lyc. N. Y., xi, 1874, 9 (Utah).
- [*Speotyto*] *hypogæa* SHARPE, Hand-list, i, 1899, 297.
- Spheotyto hypogæa* BREWER, Proc. Bost. Soc. N. H., xvii, 1875, 444 (Newburyport, Massachusetts, accidental).
- Strix californica* AUDUBON, Birds Am., fol. ed., iv, 1838, pl. 432, fig. 2 (name on plate).
- Athene socialis* GAMBEL, Proc. Ac. Nat. Sci. Phila., iii, April, 1846, 47 (Mexico; New Mexico; Rocky Mts.; California); Journ. Ac. Nat. Sci. Phila., i, 1847, 30 (California).
- Speotyto cunicularia obscura* STEPHENS, Auk, xii, Oct., 1895, 372 (Upper Lake, Lake Co., California; coll. F. Stephens).—McGREGOR, Auk, xv, 1898, 187 (crit.).
- Speotyto cunicularia beeki* ROTHSCHILD and HARTERT, Novit. Zool., ix, July 25, 1902, 405 (Guadalupe Island, Lower California; coll. Tring Mus.).

### SPEOTYTO CUNICULARIA ROSTRATA (Townsend).

#### CLARION ISLAND BURROWING OWL.

Similar to *S. c. hypogæa* but with much larger bill and feet and decidedly shorter wing and tail; color of upper parts averaging darker, the under parts usually more decidedly buffy.

*Adult male*.—Length (skins), 215–235 (221); wing, 160–169 (165); tail, 72–79.5 (76.3); culmen, from cere, 15.5–17 (16.1); tarsus, 45.5–49 (47.1); middle toe, 20–22.5 (21.4).<sup>a</sup>

*Adult female*.—Length (skins), 195–202 (198.5); wing, 164–164.5 (164.2); tail, 70–70.5 (70.2); culmen, from base, 15.5–16.5 (16); tarsus, 44.5–46 (45.2); middle toe, 20.5–21 (20.7).<sup>b</sup>

Clarion Island, Revillagigedo group, western Mexico.

*Speotyto rostrata* TOWNSEND (C. H.), Proc. U. S. Nat. Mus., xiii, Sept. 9, 1890, 133 (Clarion Island, Revillagigedo group, w. Mexico; coll. U. S. Nat. Mus.).—ANTHONY, Auk, xv, 1898, 318 (Clarion I.).

[*Speotyto*] *rostrata* SHARPE, Hand-list, i, 1899, 297.

*Speotyto cunicularia rostrata* ROTHSCHILD and HARTERT, Novit. Zool., vi, 1899, 87, 105 (Clarion I.).

*S[peotyto] c[unicularia] rostrata* ROTHSCHILD and HARTERT, Novit. Zool., ix, 1902, 405, in text.

*Pholeoptynx rostrata* GURNEY, Cat. Birds of Prey, 1894, 41.

### SPEOTYTO FLORIDANA FLORIDANA (Ridgway).

#### FLORIDA BURROWING OWL.

Above darker and much less buffy brown than in any of the forms of *S. cunicularia*, with the spotting dull white instead of more or less buffy; ground color of under parts much less buffy (dull white, buffy only on thighs and under wing-coverts); under wing-coverts spotted with brown, at least toward edge of wing; tarsus less extensively feathered, the feathering shorter; wing and tail averaging much shorter than in *S. cunicularia hypogæa* and bill larger.

<sup>a</sup> Ten specimens.

<sup>b</sup> Two specimens.

*Adults (sexes alike).*—Above brown (nearest bistre) thickly spotted with white or dull white, the spots larger and of subrounded form on outer webs of primaries; tail crossed by about five bands of dull white (those near base of tail more cinnamonous), varying in relative width; "eyebrow" (superciliary region) and lores dull white, the latter more or less tinged with brown and with black shafts; sub-orbital and auricular regions streaked with brown and pale brownish buffy or dull brownish white, the latter usually predominating; malar region, chin, and upper throat immaculate white, this extending upward behind auricular region; lower throat broadly barred with pale brownish buff or dull buffy white and deep brown; immediately beneath this barred throat-band a patch of immaculate white on foreneck; rest of under parts dull white, passing into pale buff on thighs, immaculate along median line (narrowly), but broadly barred elsewhere (except on under tail-coverts) with brown, the sides of breast and chest brown, broken by large spots of white; longer under tail-coverts usually with a more or less distinct subterminal spot of light brown; axillars and under wing-coverts light buff, the latter more or less spotted with brown, at least toward edge of wing; bill dull grayish yellow or light yellowish gray (in dried skins); iris clear lemon yellow; toes and naked portion of tarsi dull grayish brown (in dried skins).

*Young.*—Remiges and rectrices (if developed) as in adults; upper parts mostly plain brown, or much less spotted than in adults; under parts pale brownish buff or dull buffy white, the breast broadly but indistinctly barred with sooty brown, the lower throat crossed by a broad band of sooty brown (the feathers tipped with that color).

*Adult male.*—Length (skins), 195–230 (216); wing, 154.5–170 (164.2); tail, 73–80.5 (76.4); culmen, from cere, 14.5–15.5 (14.9); tarsus, 42–46.5 (44.1); middle toe, 18.5–21.5 (20.6).<sup>a</sup>

*Adult female.*—Length (skins), 191–235 (216); wing, 156–169 (163.9); tail, 70–78.5 (75.6); culmen, from cere, 14–15.5 (14.8); tarsus, 41–45.5 (43); middle toe, 19.5–22 (20.8).<sup>a</sup>

<sup>a</sup> Ten specimens, from Florida.

Locality.	Wing.	Tail.	Culmen, from cere.	Tarsus.	Middle toe.
MALES.					
Ten adult males from Florida.....	164.2	76.4	14.9	44.1	20.6
One adult male from New Providence, Bahamas ( <i>S. f. "cavicola"</i> ).....	174	88	17	47	20
One adult male from Eleuthera, Bahamas ( <i>S. f. "bahamensis"</i> ).....	158	78.5	16.5	47	21
One adult male from Great Exuma, Bahamas ( <i>S. f. "bahamensis"</i> ).....	164.5	75.5	16	44	20
Two adult males from Inagua, Bahamas ( <i>S. f. "bahamensis"</i> ).....	.....	77.2	15.2	45	20.7
One adult male from Samana Cay, Bahamas ( <i>S. f. "bahamensis"</i> ).....	168.5	77	16	43	20
Six adult males from Haiti ( <i>S. f. dominicensis</i> ).....	157	70.3	14.8	41.2	20.4

Prairies of southern Florida, in Manatee, Polk, Osceola, and De Soto counties (near Sarasota Bay; near Caloosahatchie River and on west side of Lake Okeechobee; along Kissimmee River, from Lake Kissimmee to below Fort Bassinger); also Bahama Islands (New Providence; Inagua; Eleuthera; Andros; Great Exuma; Samana Cay; Cay Sal).

*Speotyto cunicularia* var. *floridana* RIDGWAY, American Sportsman, iv, no. 14, July 4, 1874, 216 (16 miles east of Sarasota Bay, s. w. Florida; coll. U. S. Nat. Mus.).

[*Speotyto cunicularia*] var. *floridanus* RIDGWAY, American Sportsman, v, 1875, 7 (at sea, 200 miles off coast of Georgia; crit.).

*Speotyto cunicularia floridana* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 192; Nom. N. Am. Birds, 1881, no. 408a.—COUES, Check List, 2d ed., 1882, no. 488.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Check List, 1886 (and 2d ed., 1895), no. 378a; 3rd ed., 1910, 177; Auk, xiv, 1897, 134 (crit.).—SCOTT, Auk, vi, 1889, 249 (De Soto Co., Florida); ix, 1892, 212, 216 (Caloosahatchie district, Florida; habits).—CORY, Auk, viii, 1891, 349 (Cay Sal, New Providence, Eleuthera, and Andros islands, Bahamas), 350 (Eleuthera), 352 (Cay Sal); Cat. West Ind. Birds, 1892, 100 (Inagua, Eleuthera, New Providence, Andros, Great Exuma, Samana Cay, and Cay Sal, Bahamas), 140 (crit.).—RHOADS, Auk, ix, 1892, 1-8 (west side of Lake Okeechobee, Florida; habits).—BENDIRE, Life Hist. N. Am. Birds, (i), 1892, 400, pl. 12, fig. 16 (egg).

*S[peotyto] c[unicularia] floridana* COUES, Key N. Am. Birds, 2d ed., 1884, 517.

*S[peotyto] cunicularia floridana* RIDGWAY, Man. N. Am. Birds, 1887, 265.

*Speotyto cunicularia* var. *floridana* CORY, Birds Bahama Is., 1880, 126 (New Providence I.).

*Speotyto floridanus* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, special ed., 1875, iii, pl. facing p. 90.

Footnote—Continued.

Locality.	Wing.	Tail.	Culmen, from cere.	Tarsus.	Middle toe.
FEMALES.					
Ten adult females from Florida.....	163.9	75.6	14.8	43	20.8
One adult female from New Providence ( <i>S. f. "cavicola"</i> ).....	170.5	77	17	45	21
One adult female from Cay Sal, Bahamas ( <i>S. f. "bahamensis"</i> ).....	158.5	82	16.5	46.5	20
One adult female from Exuma, Bahamas ( <i>S. f. "bahamensis"</i> ).....	164	76	15.5	.....	.....
One adult female from Samana Cay, Bahamas ( <i>S. f. "bahamensis"</i> ).....	160	74.5	15	45	21
Six adult females from Haiti ( <i>S. f. dominicensis</i> ).....	157	70.3	14.8	41.2	20.4
SEX UNKNOWN.					
One adult from New Providence, Bahamas ( <i>S. f. "cavicola"</i> )..	158.5	74	15.5	43.5	20

While it is possible that a larger series of specimens from the island of New Providence may show that the birds from there are really separable, the indications are that the type of *S. cunicularia cavicola* is an unusually large bird, for one of the three specimens examined is even smaller in all its measurements, except length of culmen, than even the average of specimens from Florida. As to supposed differences of coloration, I can not detect the slightest one that is constant.



*Speotyto floridana* PALMER (W.), Auk, xiii, 1896, 99, pl. 2 (Kissimmee prairies, Florida; habits; crit.; etc.).

[*Speotyto*] *floridana* SHARPE, Hand-list, i, 1899, 297.

*Pholeoptynx floridana* GURNEY, Cat. Birds of Prey, 1894, 41.

*Speotyto cunicularia dominicensis* (not of Cory) NORTHRUP, Auk, viii, 1891, 75 (Andros I., Bahamas).

*Speotyto cunicularia bahamensis* CORY, Auk, viii, Oct., 1891, 351 (Inagua, Bahamas; coll. C. B. Cory).

*Speotyto bahamensis* MAYNARD, App. to Cat. Birds West Ind., Nov. 29, 1899, 33 (New Providence, Bahamas; coll. C. J. Maynard).

*Pholeoptynx bahamensis* GURNEY, Cat. Birds of Prey, 1894, 41.

*Speotyto cunicularia cavicola* BANGS, Auk, xvii, July, 1900, 287 (Nassau, New Providence, Bahamas; coll. E. A. and O. Bangs).—BONHOTE, Ibis, 1903, 295 (New Providence).—RILEY, Auk, xxii, 1905, 354 (New Providence; crit.).

### SPEOTYTO FLORIDANA DOMINICENSIS (Cory).

#### HAITIAN BURROWING OWL.

Similar to *S. f. floridana* but wing, tail, and tarsus averaging decidedly shorter, and under parts more extensively and narrowly barred, the chest with less of brown and more white spotting or barring.

*Adult male*.—Length (skins), 200–230 (211); wing, 153–161.5 (157.2); tail, 72–76 (73.9); culmen, from base, 14.5–15.5 (15.2); tarsus, 38–45.5 (42); middle toe, 19–21.5 (20.5).<sup>a</sup>

*Adult female*.—Length (skins), 185–210 (202); wing, 145–165.5 (157); tail, 64.5–76.5 (70.3); culmen, from cere, 14–15.5 (14.8); tarsus, 38.5–45 (41.2); middle toe, 18.5–21.5 (20.4).<sup>a</sup>

Island of Haiti, Greater Antilles (Le Coup, Port au Prince, and near Lake Gautier, Haiti; Honduras, near Azua, and between La Vega and Santo Domingo City, Santo Domingo).

*Strix cunicularia* (not of Molina) VIEILLOT, Ois. Am. Sept., i, 1807, 48 (St. Domingo; descr; crit.).

(?) *Strix fusca* VIEILLOT,<sup>b</sup> Nouv. Dict. d'Hist. Nat., vii, 1817, 22 ("Saint Domingue et Porto Rico").

*A[thene] dominicensis* (not *Strix dominicensis* Gmelin nor *S. domingensis* Müller) GRAY, Gen. Birds, i, 1845, 35.

[*Athene*] *dominicensis* BONAPARTE, Consp. Av., i, 1850, 38.

*Athene dominicensis* STRICKLAND, Orn. Syn., i, 1855, 161.—SALLÉ, Proc. Zool. Soc. Lond., 1857, 231 (Santa Domingo; habits).

*Strix dominicensis* BRYANT, Proc. Bost. Soc., N. H., xi, 1866, 90 (Santo Domingo).

*Speotyto cunicularia dominicensis* CORY, Bull. Nutt. Orn. Club, vi, 1881, 154 (Haiti); Cat. West Ind. Birds, 1892, 10, 100, 131, 140 (crit.).—CHERRIE, Contr. Orn. San Dom., 1896, 22.

[*Speotyto*] *cunicularia dominicensis* CORY, List Birds West Ind., 1885, 21, part (Santo Domingo).

*Speotyto dominicensis* CORY, Auk, iii, 1886, 471 (synonymy; descr.); Birds West Ind., 1889, 194.—VERRILL (A. E. and A. H.), Proc. Ac. Nat. Sci. Phila., 1909, 359 (near Azua and between La Vega and Santiago, Santo Domingo).

<sup>a</sup> Six specimens.

<sup>b</sup> Described as having feathered toes; otherwise the description answers fairly well for *Speotyto*.

[*Speotyto*] *dominicensis* SHARPE, Hand-list, i, 1899, 297.

*Pholeoptynx dominicensis* GURNEY, Cat. Birds of Prey, 1894, 41.

*Speotyto cunicularia* (not *Strix cunicularia* Molina) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 143, part (Santo Domingo; see p. 146).—CORY, Birds Haiti and San Domingo, 1885, 118.

**SPEOTYTO GUADELOUPENSIS GUADELOUPENSIS (Ridgway).**

**GUADELOUPE BURROWING OWL.**

Much warmer or more reddish brown above than any of the forms of *S. cunicularia* or *S. floridana*, with the lighter spots smaller, less numerous, and dull brownish buff instead of light buff or white; light colored spots on outer webs of primaries smaller, brownish buff; "eyebrow" brown, not whitish; under parts with ground color more deeply buffy, with brown bars narrower, except on breast where brown predominates, the brownish buff forming roundish or oval spots or broad transverse bars; fourth and fifth primaries (counting from outside) longest.

*Adults (sexes alike).*—Above light vandyke brown or dull verona brown, spotted with light brownish buff, the spots on outer webs of primaries much smaller than the brown interspaces and not reaching to shafts; tail crossed by four or five narrow interrupted bands of pale brownish buff, and narrowly tipped with the same; "eyebrow" (superciliary region) brown, broken by small spots or streaks of brownish buff; lores mixed brown and dull brownish white, becoming dark sooty brown or blackish terminally; suborbital and auricular regions brown, narrowly and indistinctly streaked with paler; malar region, chin, and upper throat immaculate dull white or buffy white; lower throat broadly barred with brownish buff and deep brown, the former predominating anteriorly, the latter posteriorly; a small but inconspicuous (sometimes scarcely obvious) spot of plain brownish buff in center of foreneck; chest and breast brown (like upper parts) broken by rounded, guttate, or oval spots and broad bars of brownish buff; rest of underparts light brownish buff or dull light cinnamon-buff, deeper on thighs, the sides and flanks rather broadly barred with lighter, more rufescent, brown; under wing-coverts cinnamon-buff, spotted toward edge of wing with brown; bill dull yellowish (in dried skins); toes and bare parts of tarsus light brownish (in dried skins).

*Adults.*—Length (skins), about 215; wing, 158–162.5 (160); tail, 75.5–86.4 (79.5); culmen, from cere, 15–15.5 (15.2); tarsus, 42.5–46.2 (44.2); middle toe, 21.5.<sup>a</sup>

Island of Guadeloupe, Lesser Antilles.

*Speotyto cunicularia*, var. *guadeloupensis* RIDGWAY, in Baird, Brewer, and Ridgway, Hist. N. Am. Birds, iii, 1874, 90, footnote (Guadeloupe Island, Lesser Antilles; coll. Mus. Bost. Soc. N. H.).

<sup>a</sup> Three specimens. No specimens with sex determined are available.

[*Speotyto cunicularia*] b. *guadeloupensis* COUES, Birds Northwest, 1874, 322.

*Speotyto cunicularia guadeloupensis* RIDGWAY, Proc. U. S. Nat. Mus., iv, Nov. 25, 1881, 196.

[*Speotyto*] *guadeloupensis* CORY, List Birds West Ind., 1885, 21, part (Guadeloupe).

*Speotyto guadeloupensis* CORY, Auk, iii, 1886, 471 (synonymy; descr.); viii, 1891, 349 (diagnosis); Birds West Ind., 1889, 194; Cat. West Ind. Birds, 1892, 10, 100.

[*Speotyto*] *guadalupensis* SHARPE, Hand-list, i, 1899, 297.

*Pholeoptynx guadeloupensis* GURNEY, Cat. Birds of Prey, 1894, 41.

### SPEOTYTO GUADELOUPENSIS AMAURA (Lawrence).

#### ANTIGUA BURROWING OWL.

Similar to *S. g. guadeloupensis* but smaller and much darker in color, the upper parts very dark vandyke brown, darker bars on under parts darker and broader, the chin and upper throat more buffy.

*Adult male*.—Length (skins), 200–227 (211); wing, 145.5–154 (150.7); tail, 70.5–75.5 (73.3); culmen, from cere, 14–14.5 (14.2); tarsus, 39.5–41.5 (40.8); middle toe, 20–21 (20.5).<sup>a</sup>

*Adult female*.—Length (skins), 218–295 (249); wing, 148.5–151 (150); tail, 70–73.5 (72); culmen, from cere, 14.5–15.5 (14.8); tarsus, 39.5–40.5 (39.8); middle toe, 19.5–21.5 (20.8).<sup>a</sup>

Islands of Antigua and Nevis, Lesser Antilles.

*Speotyto guadeloupensis* (not *S. cunicularia* var. *guadeloupensis* Ridgway) SHARPE, Cat. Birds Brit. Mus., ii, 1875, 147 (Nevis, West Indies).—CORY, List Birds West Ind., 1885, 21, part (Nevis).

*Speotyto amaura* LAWRENCE, Proc. U. S. Nat. Mus., i, Dec. 9, 1878, 234 (Antigua, West Indies; coll. U. S. Nat. Mus.); i, 1879, 487 (Antigua).—CORY, Auk, iii, 1886, 472 (synonymy; descr.); viii, 1891, 47 (Antigua), 349 (diagnosis; crit.); Birds West Ind., 1889, 195; Cat. West Ind. Birds, 1892, 10, 100.

[*Speotyto*] *amaura* CORY, List Birds West Ind., 1885, 21.—SHARPE, Hand-list, i, 1899, 297.

*Pholeoptynx amaura* GURNEY, Cat. Birds of Prey, 1894, 41.

<sup>a</sup> Three specimens.

Locality.	Wing.	Tail.	Culmen, from cere.	Tarsus.	Middle toe.
MALES.					
Two adult males from Antigua.....	149	74.7	14	41.5	20.7
One adult male from Nevis.....	154	70.5	14.5	39.5	20
FEMALES.					
Two adult females from Antigua.....	150.5	72.5	14.5	39.5	21.5
One adult female from Nevis.....	151	73.5	14.5	40.5	19.5
SEX UNKNOWN.					
One adult from Nevis.....	148	74	14.5	39.5	21.5
Three adults from Guadeloupe ( <i>S. g. guadeloupensis</i> ).....	160	79.5	15.2	44.2	21.5

Specimens from Nevis do not differ, that I can see, from Antigua examples.





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<sup>1</sup> Misspelled "apiastur" on page 481.

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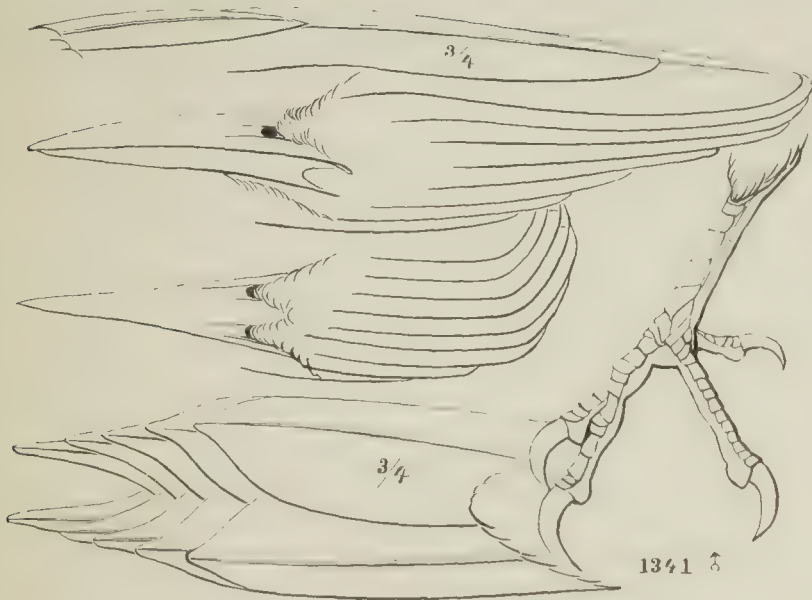




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-rumped.....	47	aurifrons.....	83
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Picus.....	112	arborea.....	681
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Otus.....	704	Zygodaactyli.....	1
asio.....	685, 703	Aureoli.....	360
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Xenocraugus.....	264	Pteroglossi.....	328



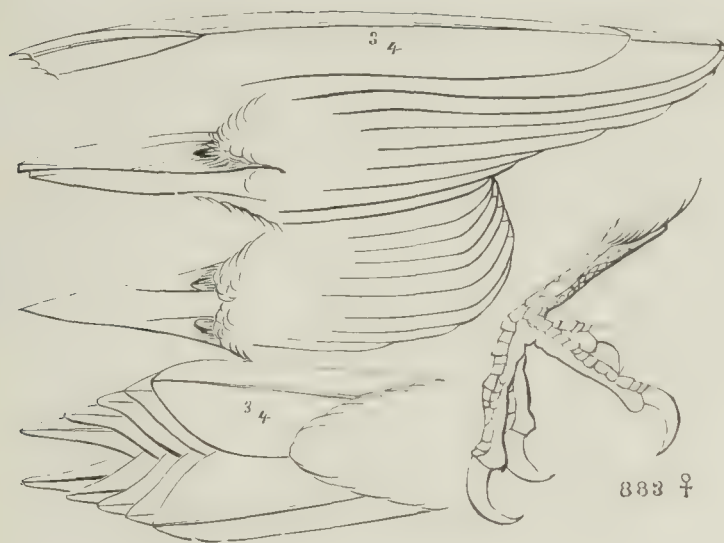


1. COLAPTES auratus.

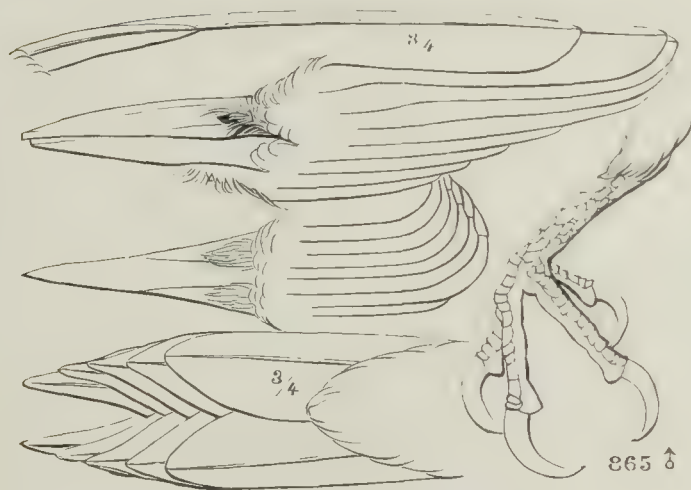


2. NESOCELEUS fernandinæ.





1. *MELANERPES erythrocephalus*.



2. *CENTURUS carolinus*.







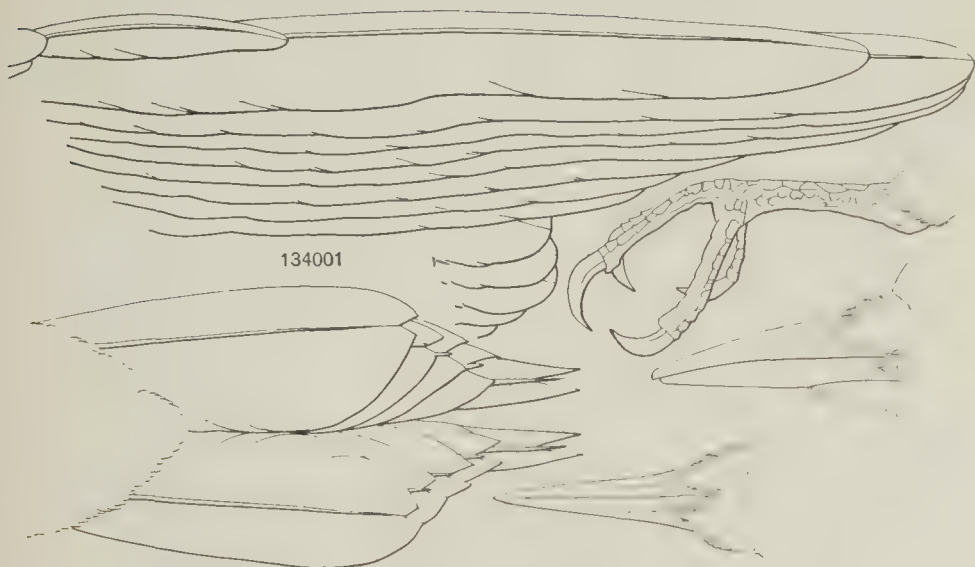
1. *BALANOSPHYRA formicivora*.



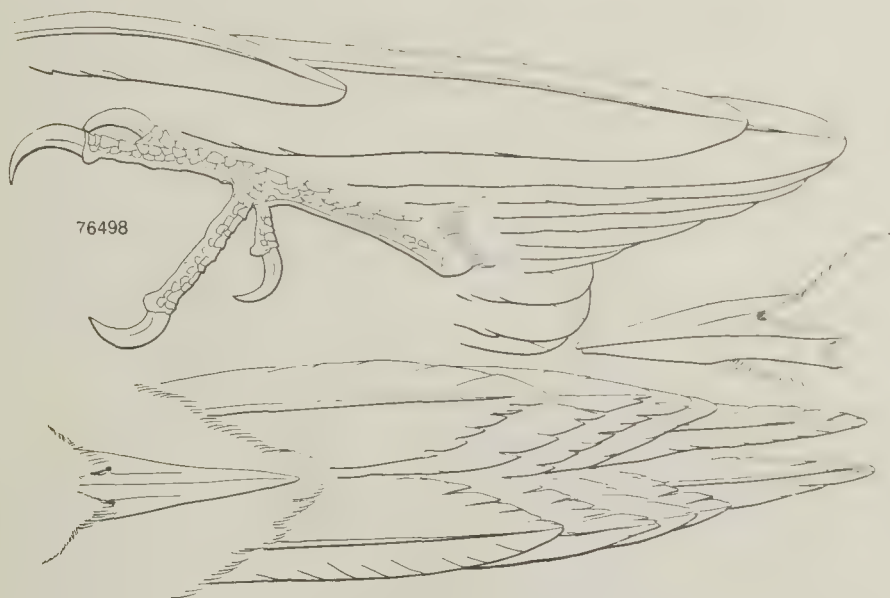
2. *LINNEOPICUS herminieri*.







1. *BALANOSPHYRA formicivora*.

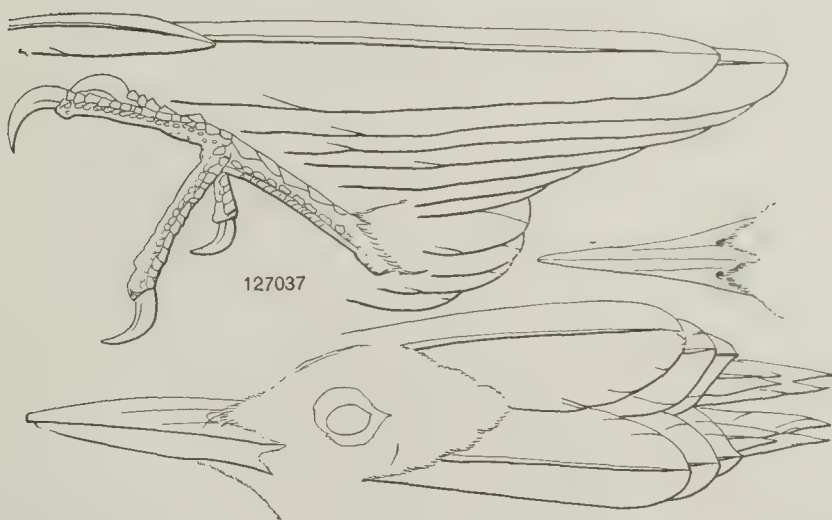


2. *LINNEOPICUS herminieri*.





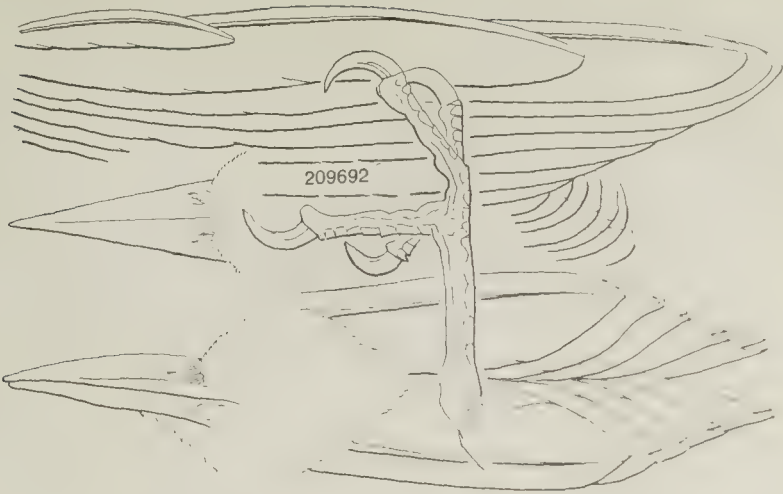
1. *ASYNDESMUS lewisi*.



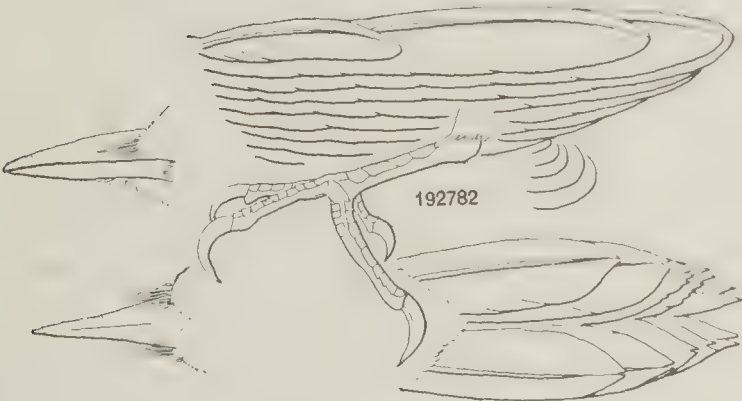
2. *TRIPSURUS pucherani*.



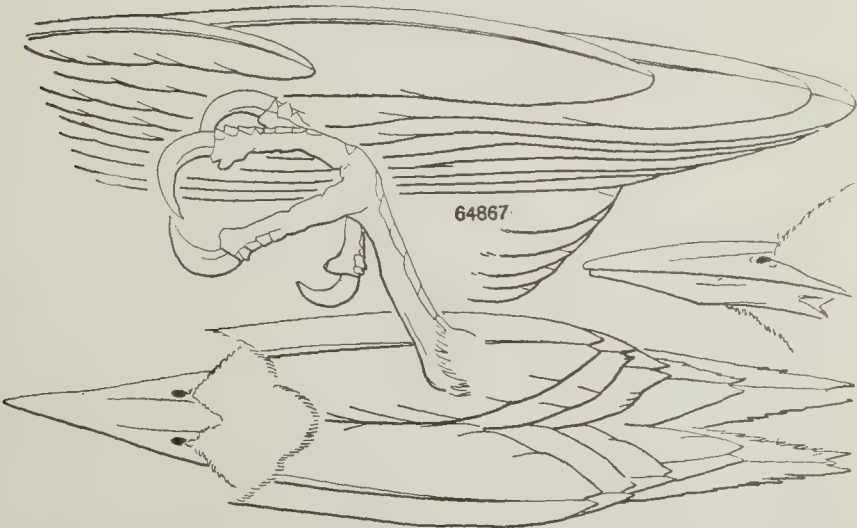




1. *CHLORONERPES yucatanensis*.



2. *VENILIORNIS sanguinolentus*.



3. *CELEUS castaneus*.





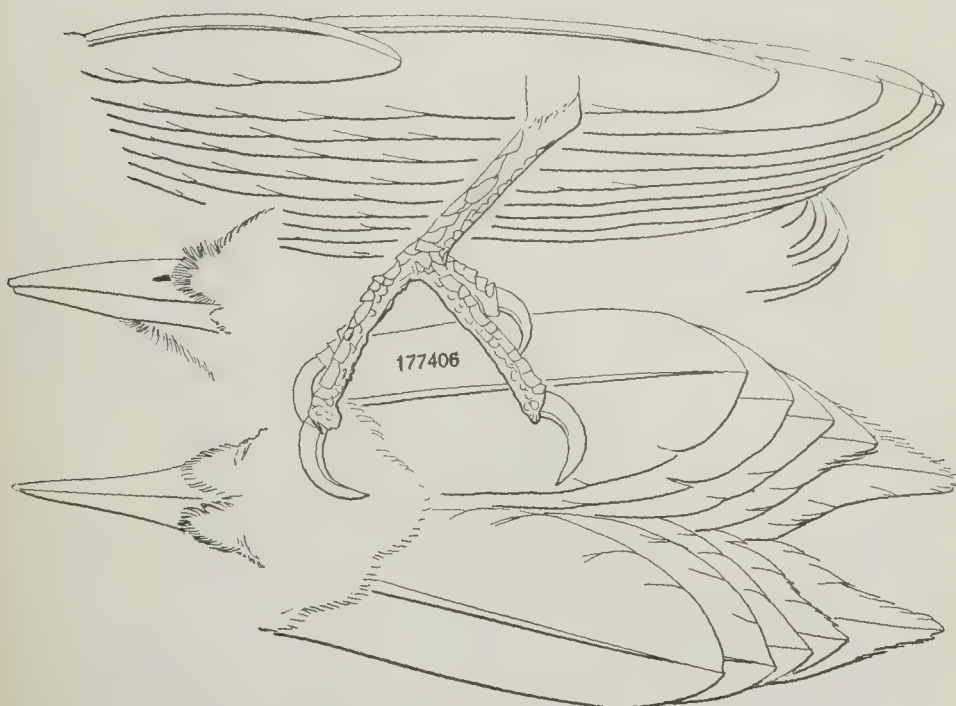


**I. CEOPHLÆUS lineatus.**





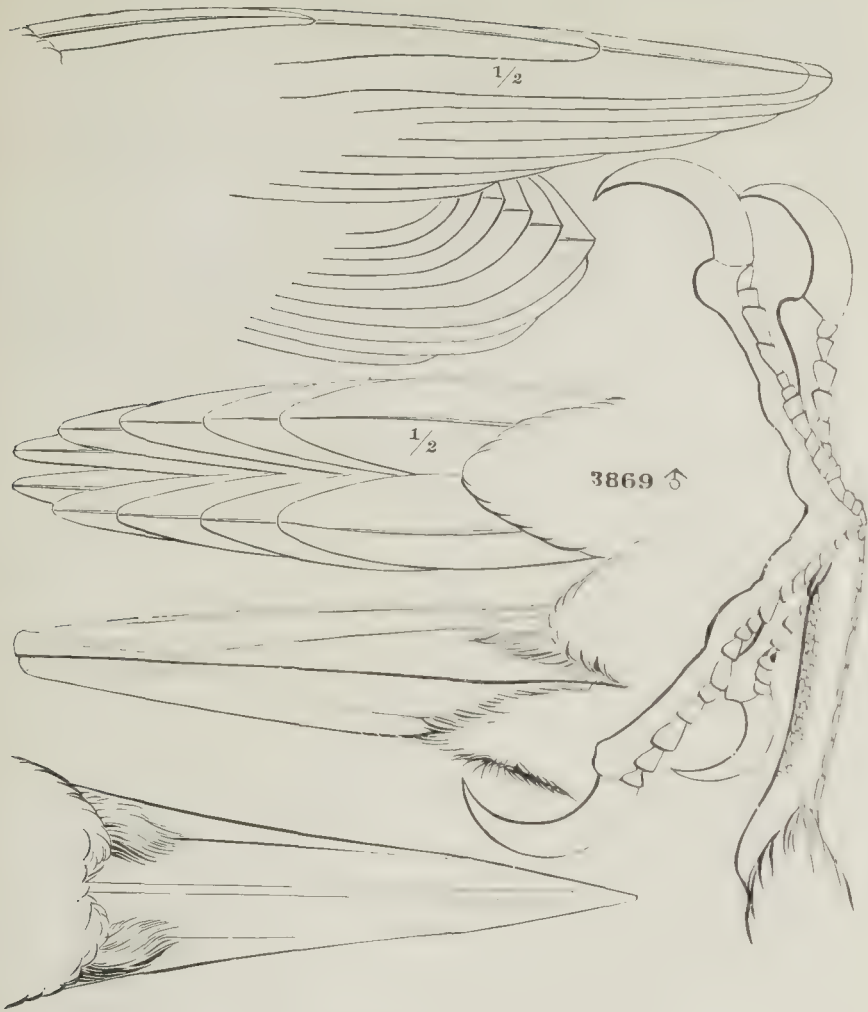
1. *PHLÆOTOMUS pileatus*.



2. *XIPHIOPICUS percussus*.







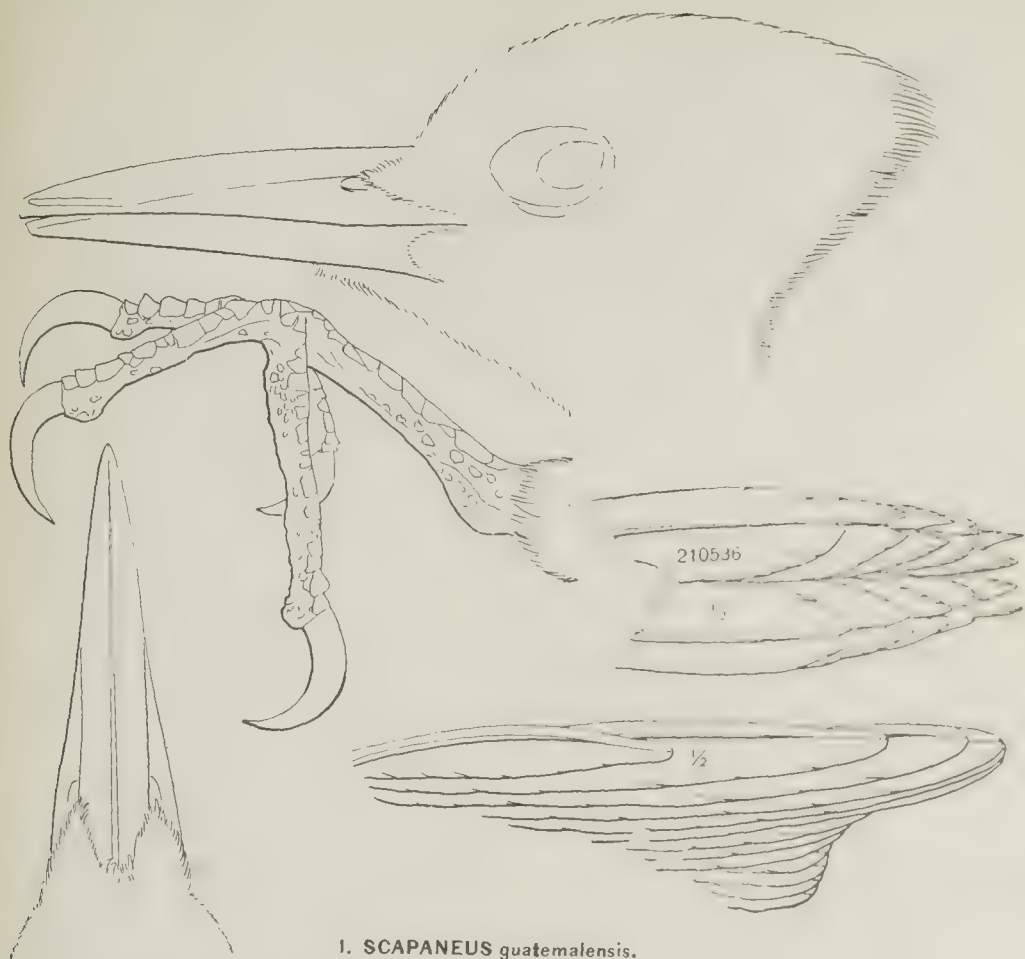
1. *CAMPEPHILUS principalis*.



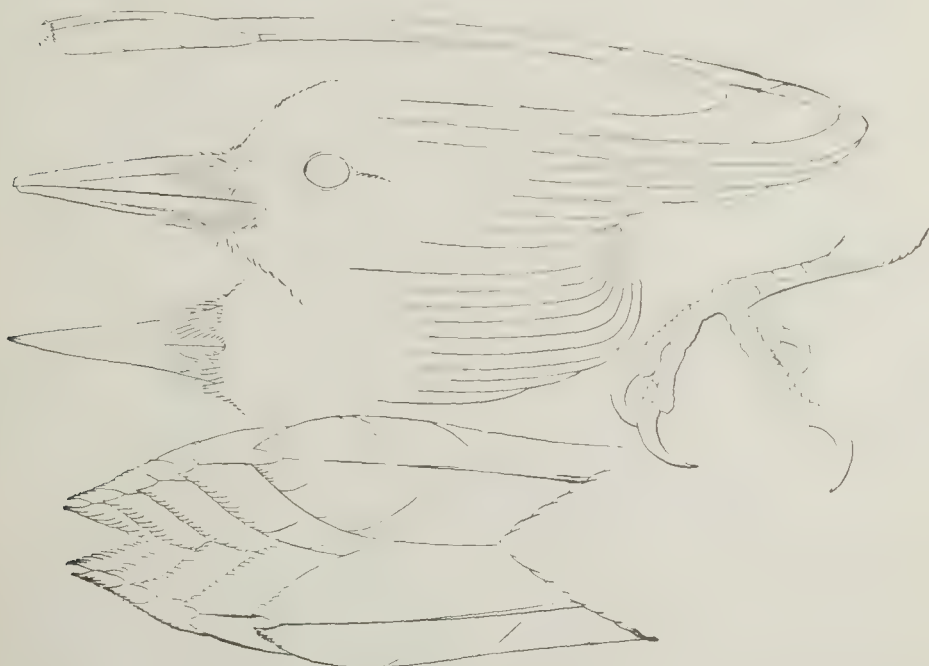
2. *PHRENOPICUS borealis*.





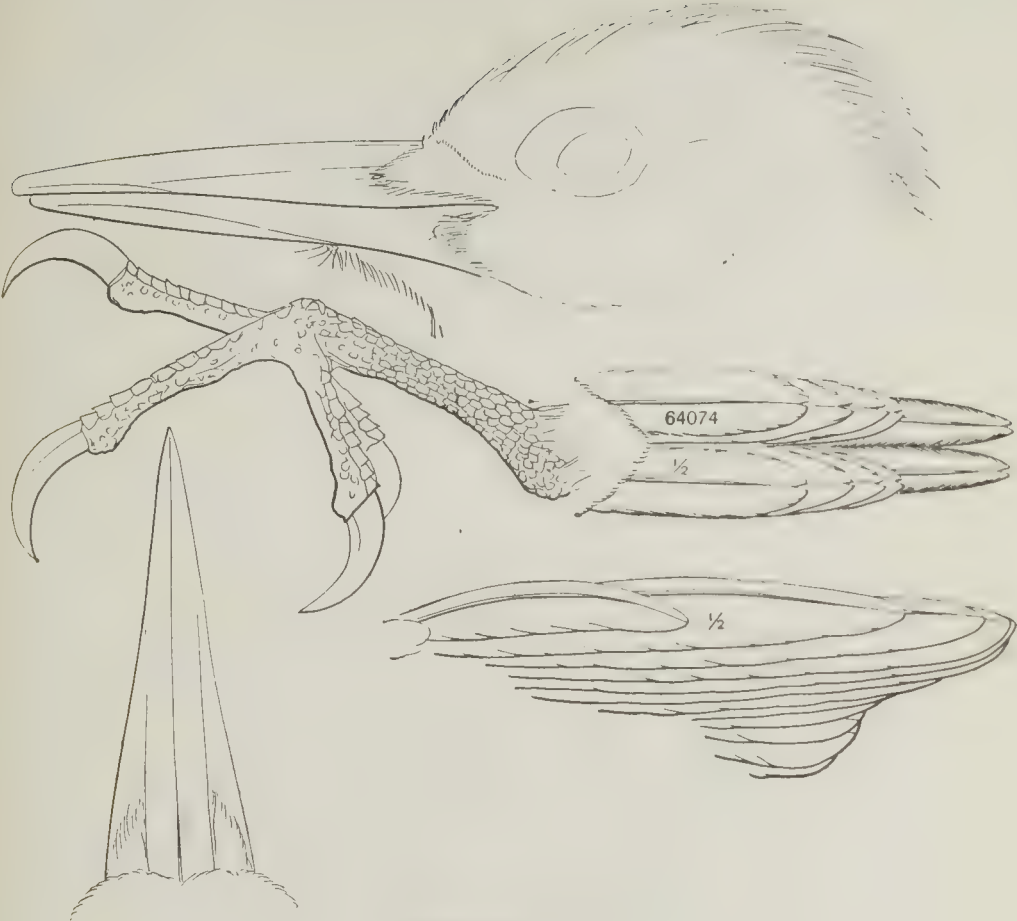


1. *SCAPANEUS guatemalensis*.

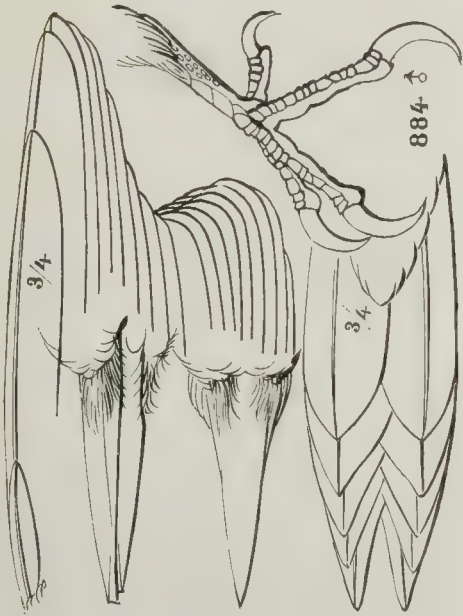


2. *XENOPICUS albolarvatus*.

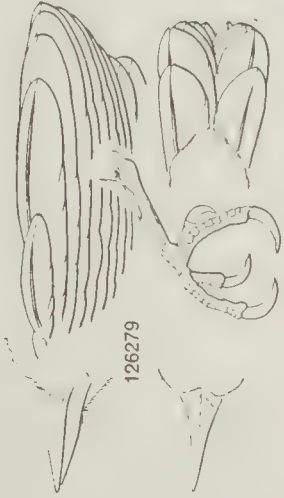




1. CNIPARCHUS hæmatogaster.



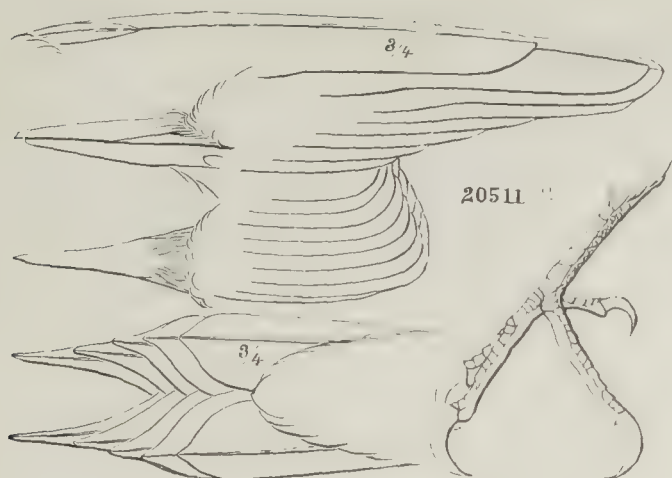
2. DRYOBATES villosus.



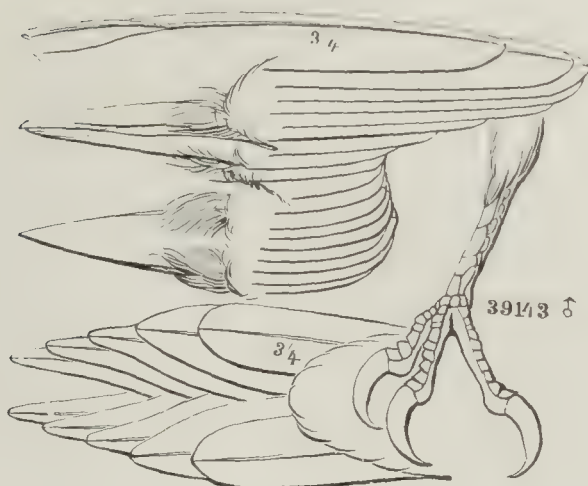
3. PICUMNUS olivaceus.



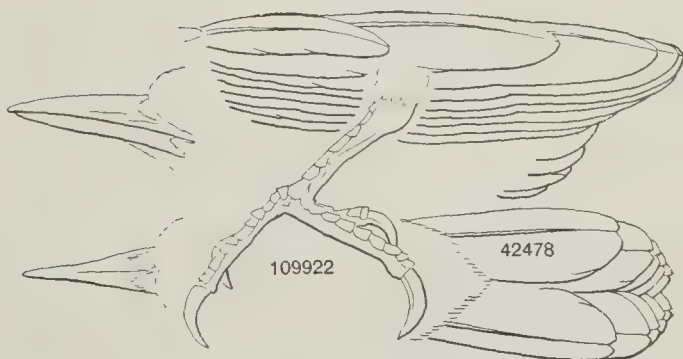




1. SPHYRAPICUS varius.



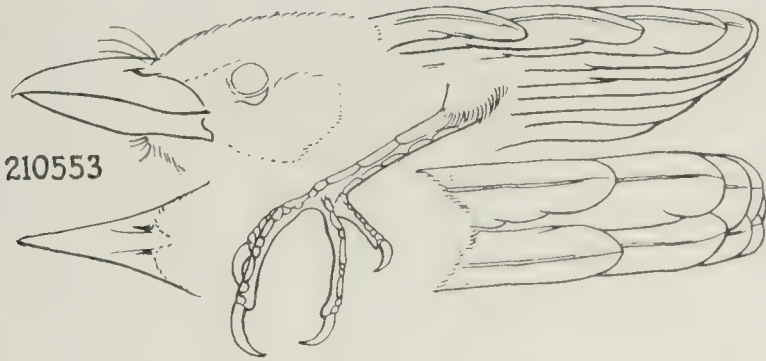
2. PICOIDES arcticus.



3. NESOCITTES micromegas.

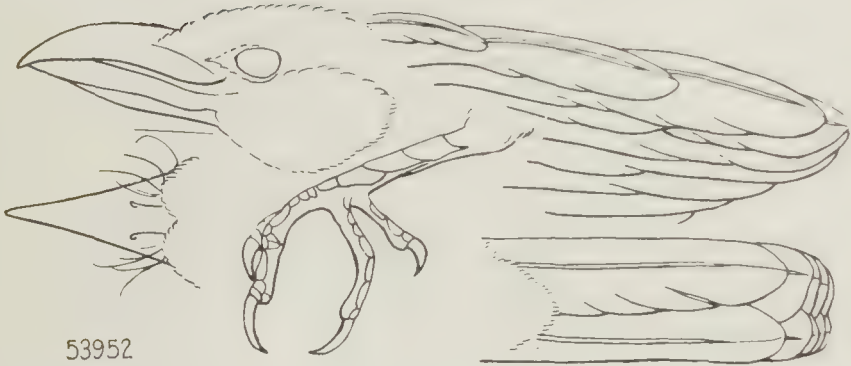






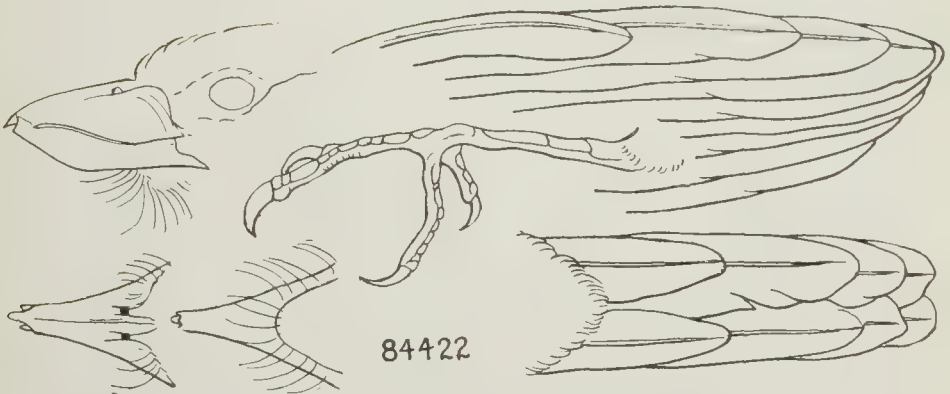
210553

1. *EUBUCCO salvini*.



53952

2. *CAPITO maculicoronatus*.



84422

3. *DICRORHYNCHUS frantzii*.

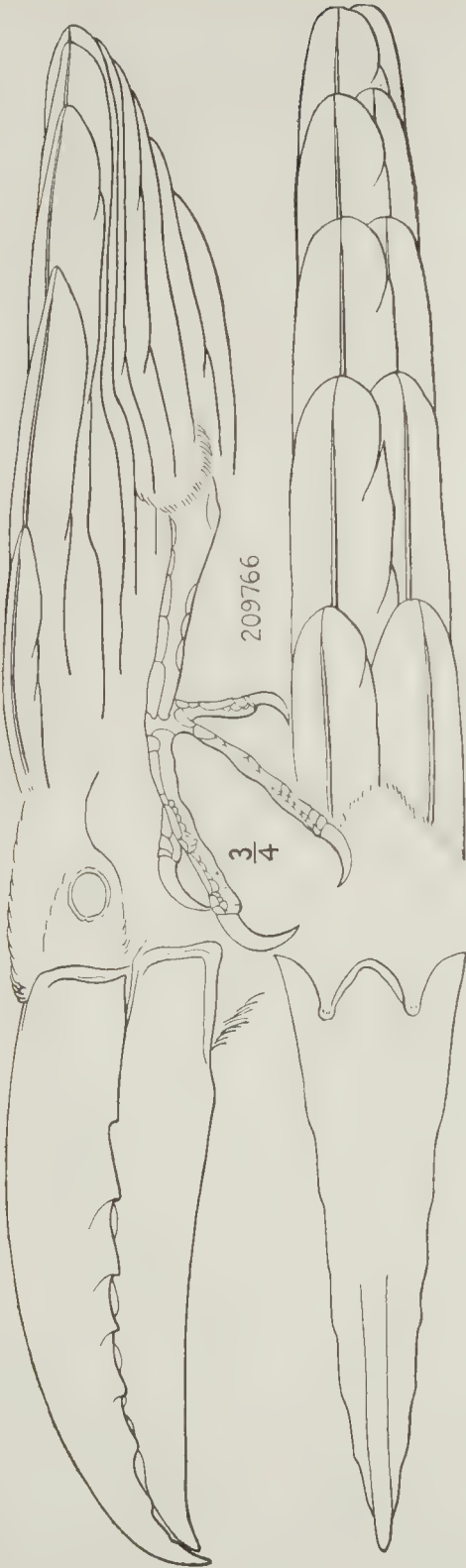




I. RAMPHASTOS brevicarinatus.



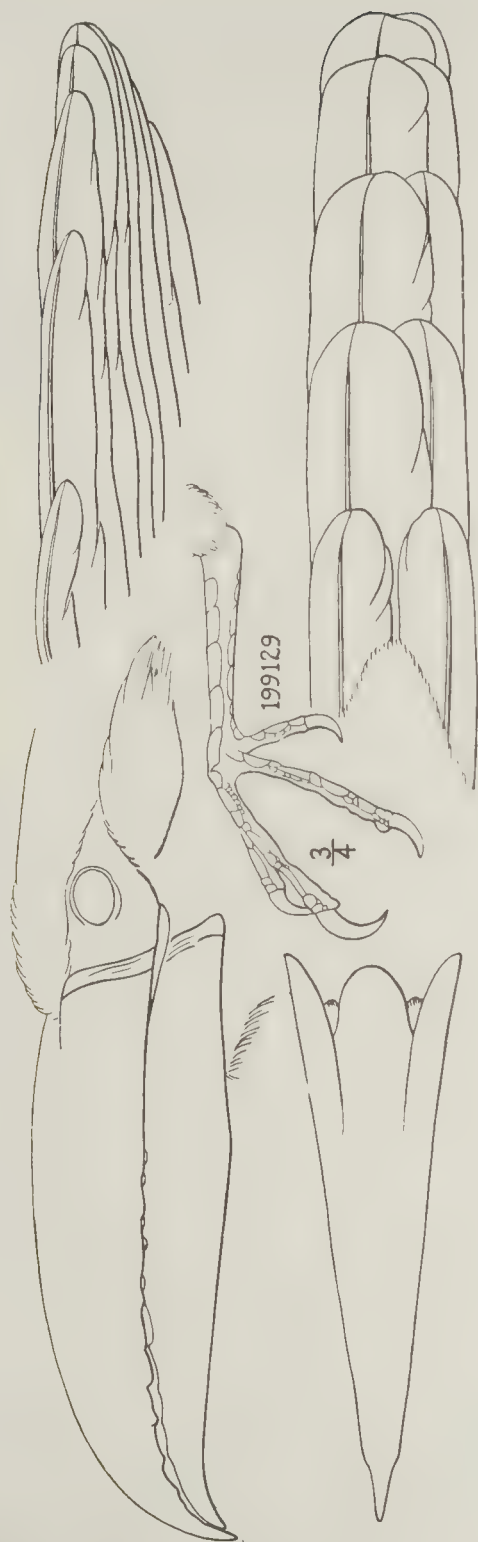




1. *PTEROGLOSSUS torquatus*.







I. *SELENIDERA spectabilis*.

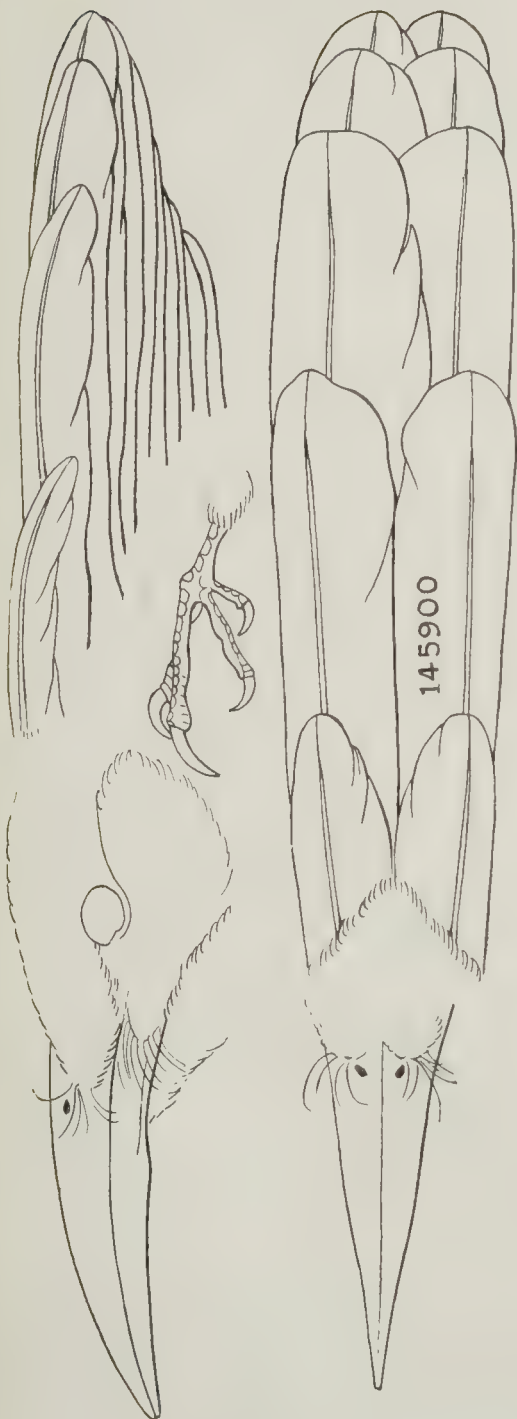




I. AULACORHYNCHUS caruleogularis.







1. *JACAMEROPS aurea*.



2. *BRACHYGALBA salmori*.

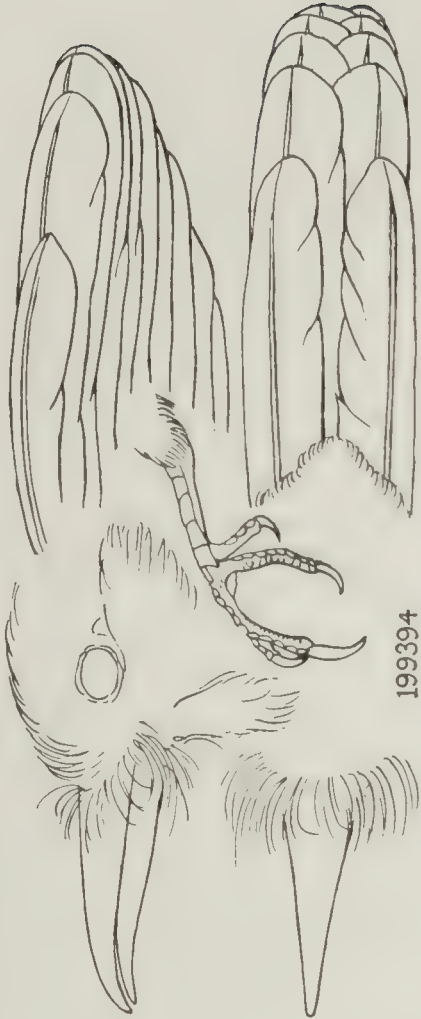
3. *TODUS mexicanus*.





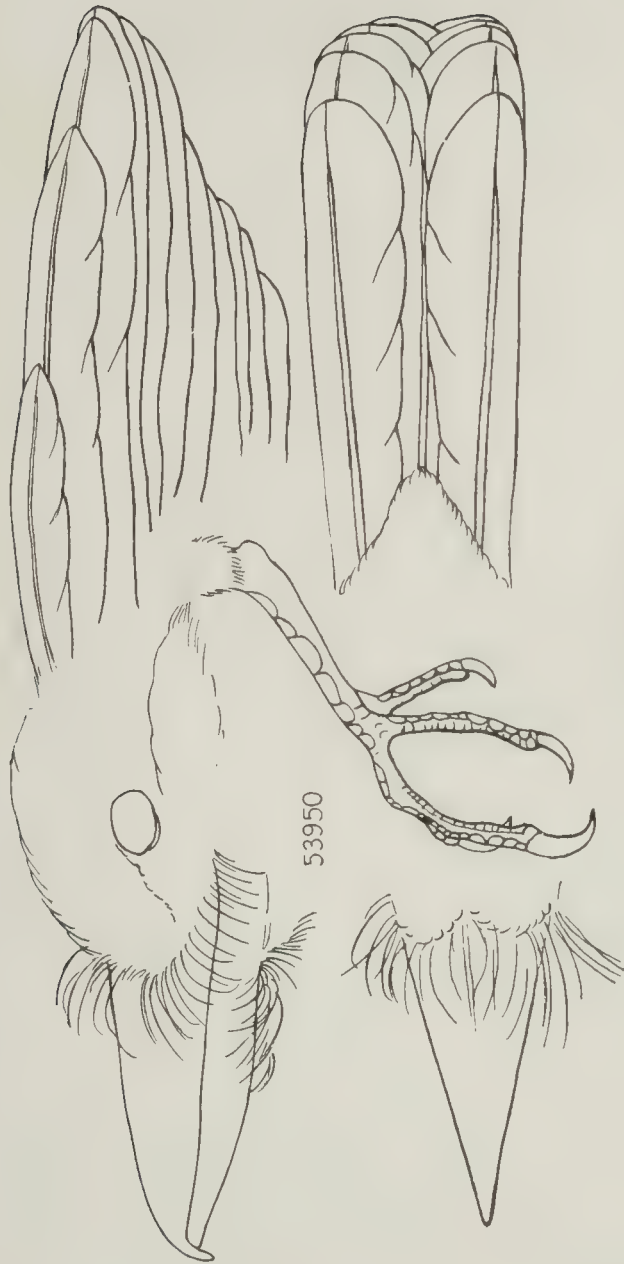


1. GALBULA melanogenia.



2. MALACOPTILA panamensis.

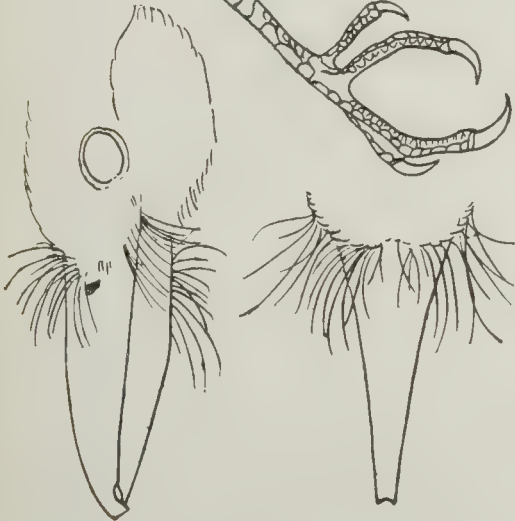




I. NOTHARCHUS dysoni.

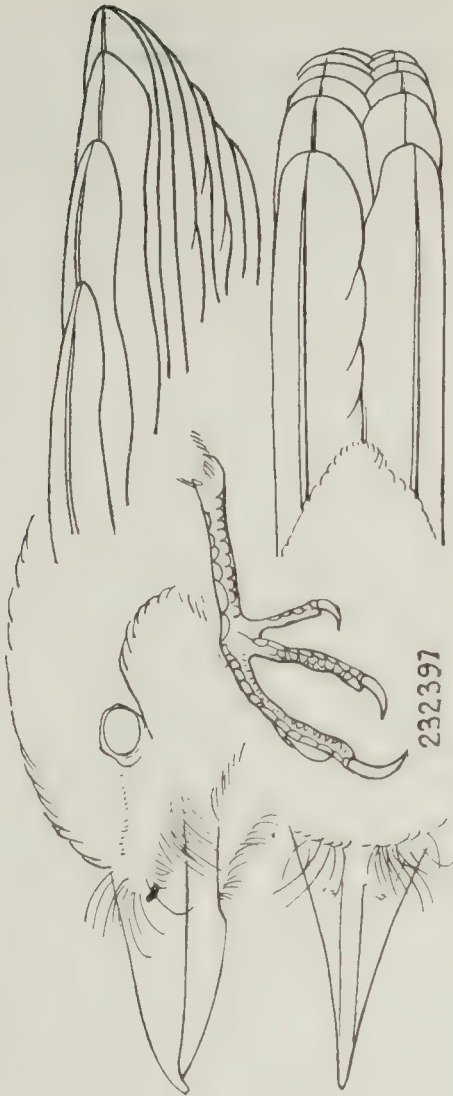






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1. HYPNELUS ruficollis.

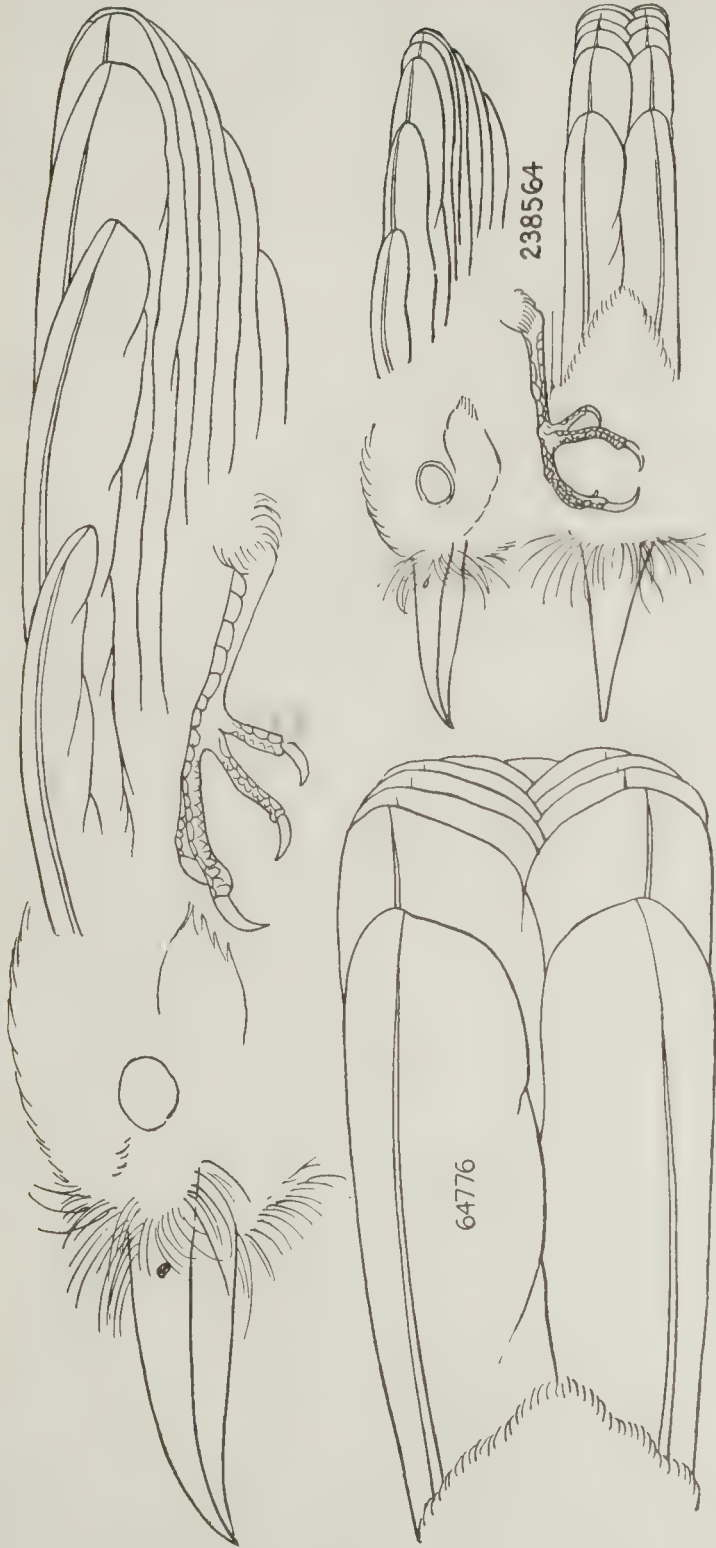


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2. ECCHAUNORNIS fulvidus.



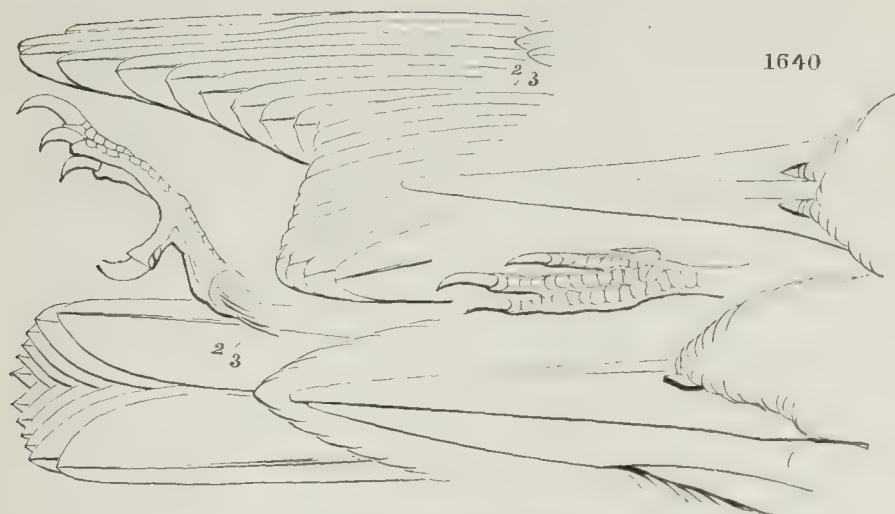




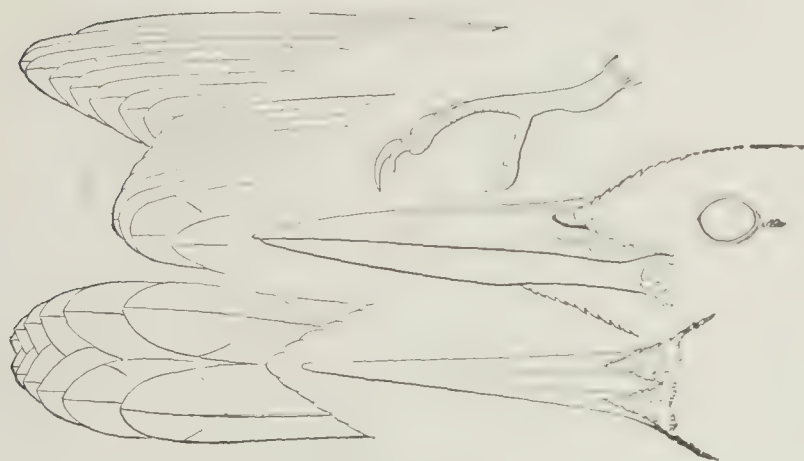
2. NONNULA frontalis.

1. MONASA grandior.





1. *STREPTOCERYLE* *alcyon*.



2. *CHLOROCERYLE* *septentrionalis*.



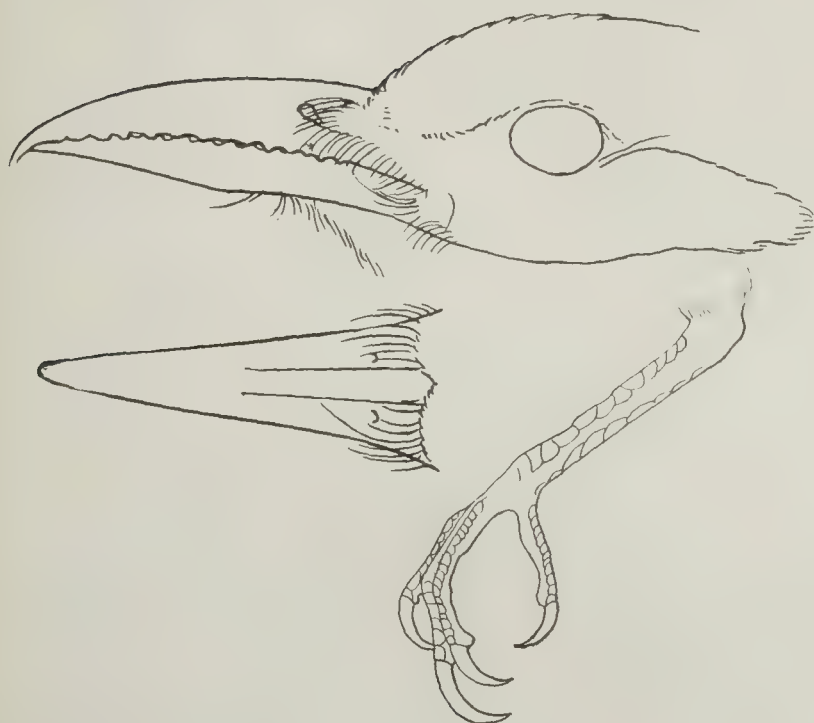
3. *HYLOMANES* *momotula*.



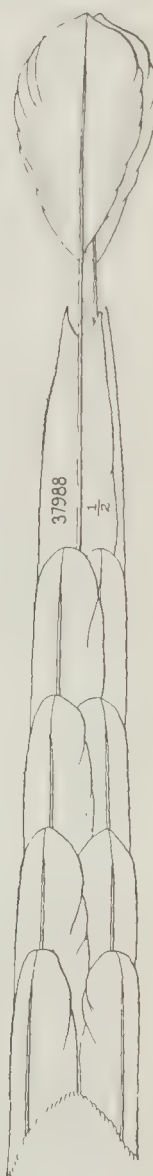




1. *MOMOTUS caeruleiceps*.

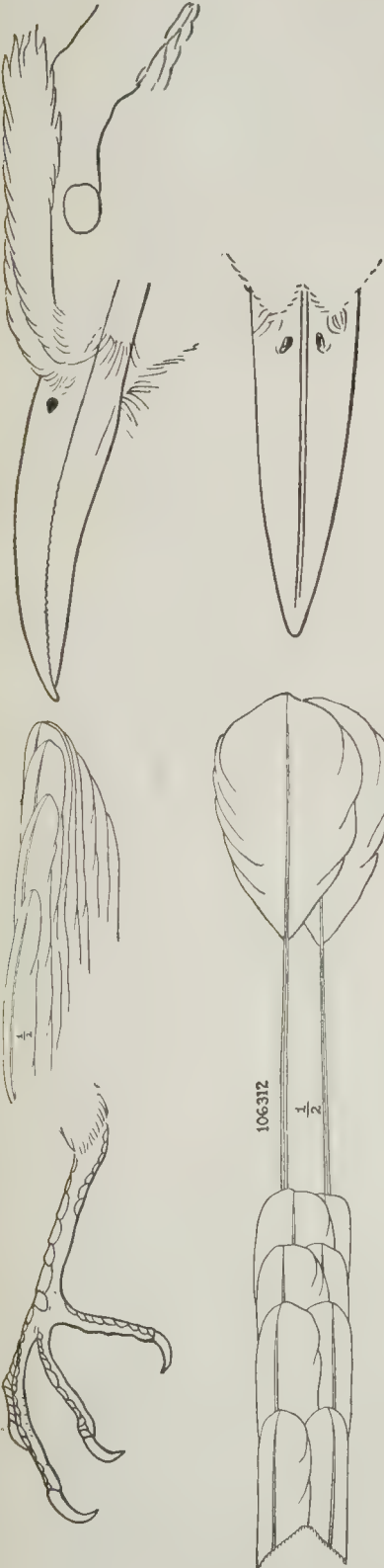


2. *UROSPATHA semirufa*

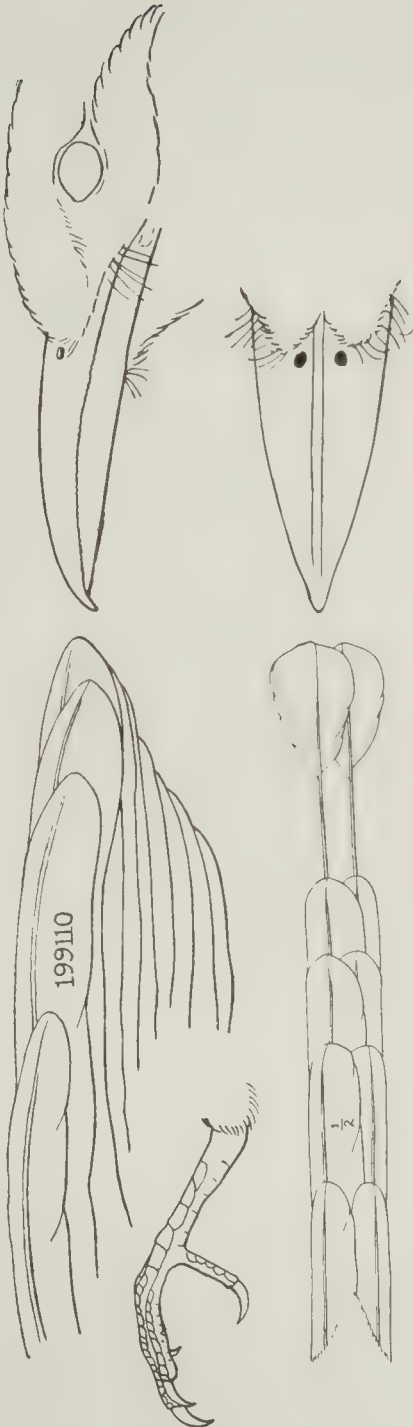






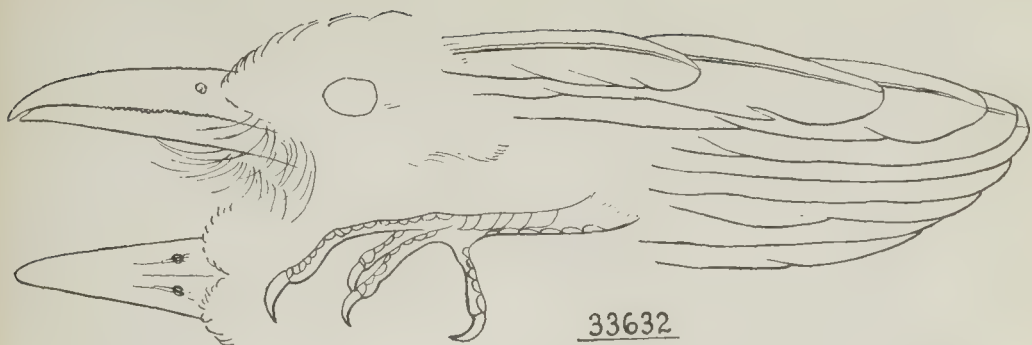


1. EUMOMOTA superciliosa.



2. ELECTRON minor.

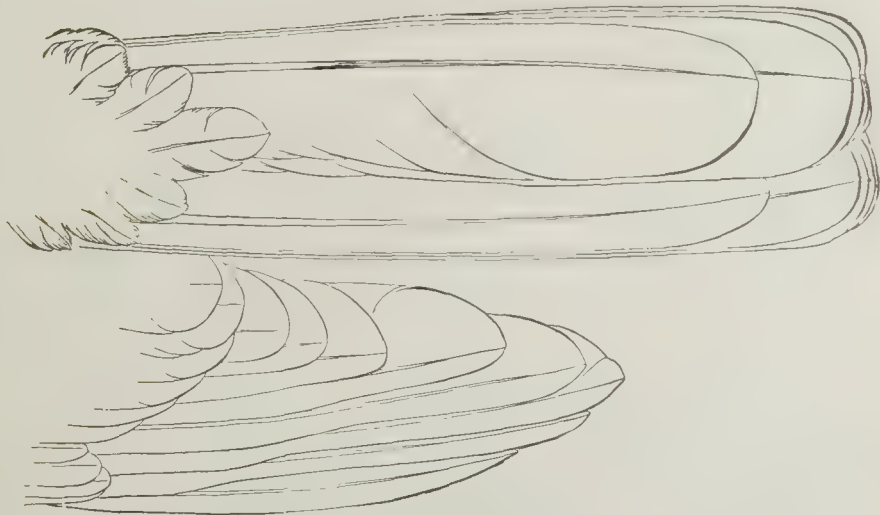




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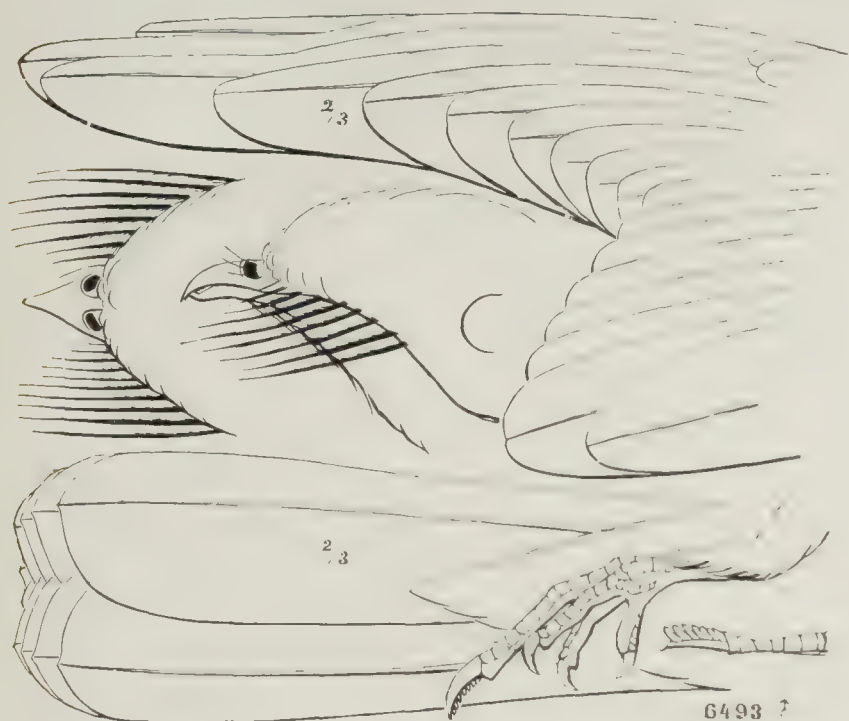
1. *ASPATHA gularis*.



2. *NYCTIDROMUS albigollis*.







1. ANTROSTOMUS carolinensis.



2. ANTROSTOMUS vociferus.

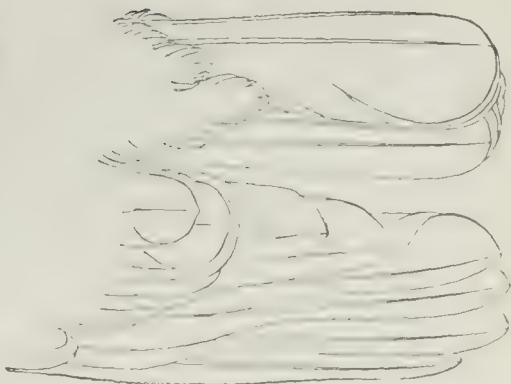




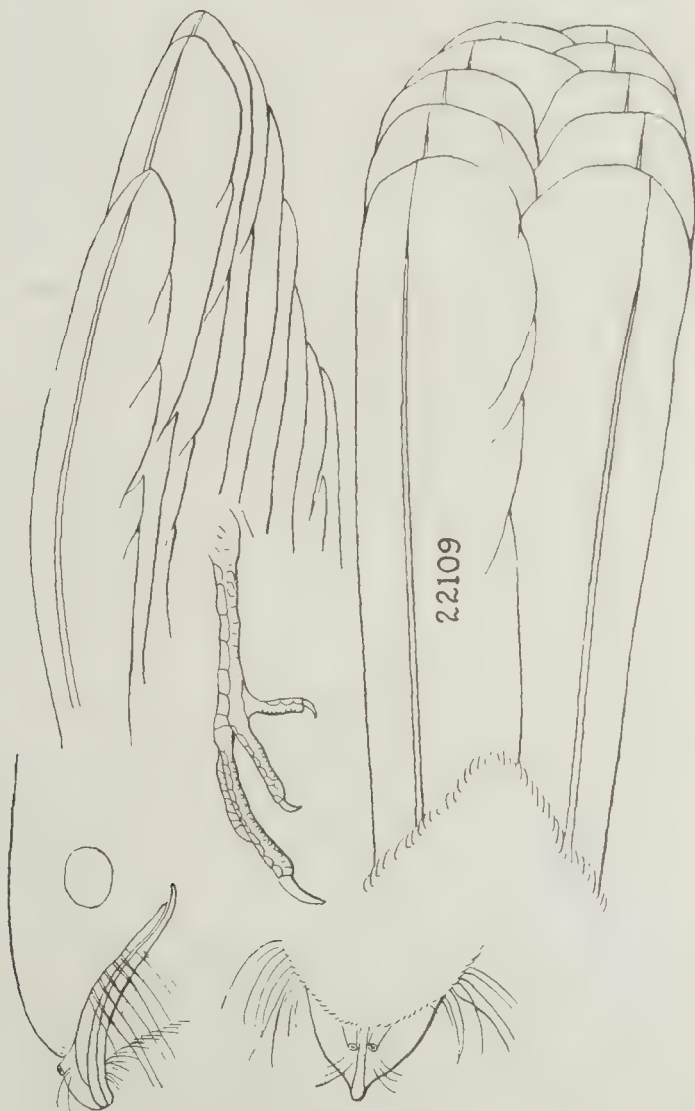


I. STENOPSIS insularis.





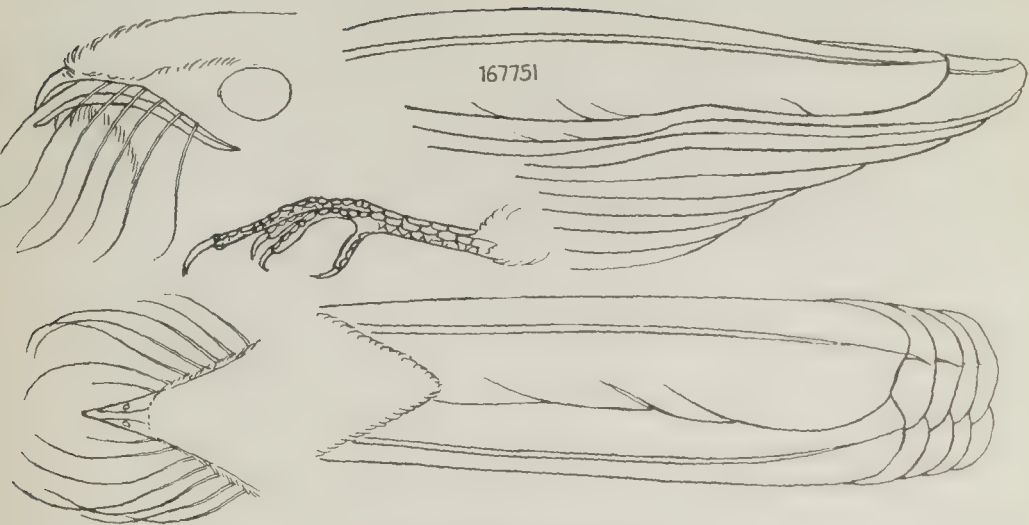
1. *PHALÆNOPTILUS nuttalli*.



2. *SIPHONORHIS americana*.



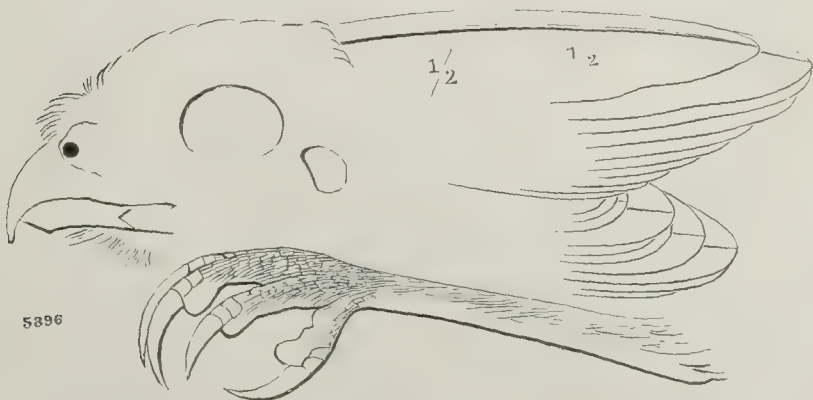




1. NYCTAGREUS yucatanensis.



2. CHORDEILES virginianus.

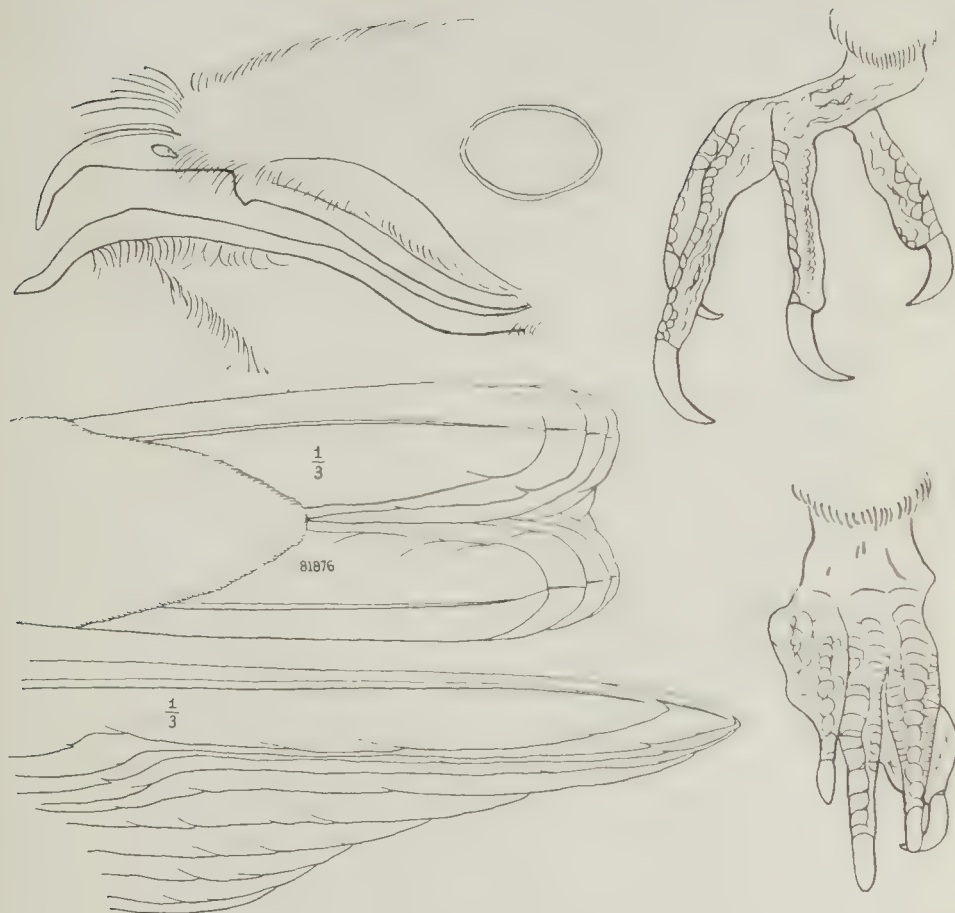


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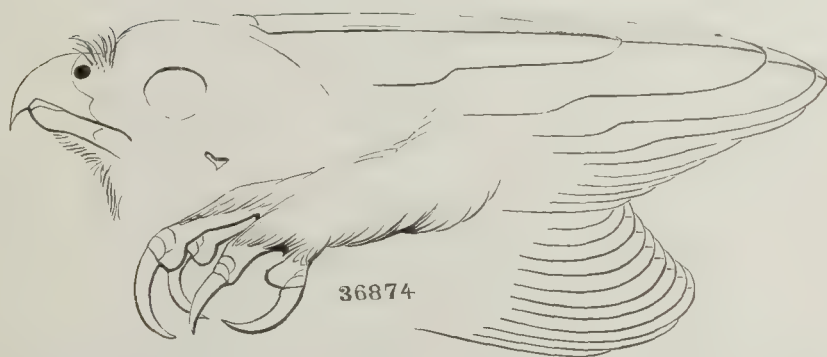
3. SPEOTYTO hypogaea.





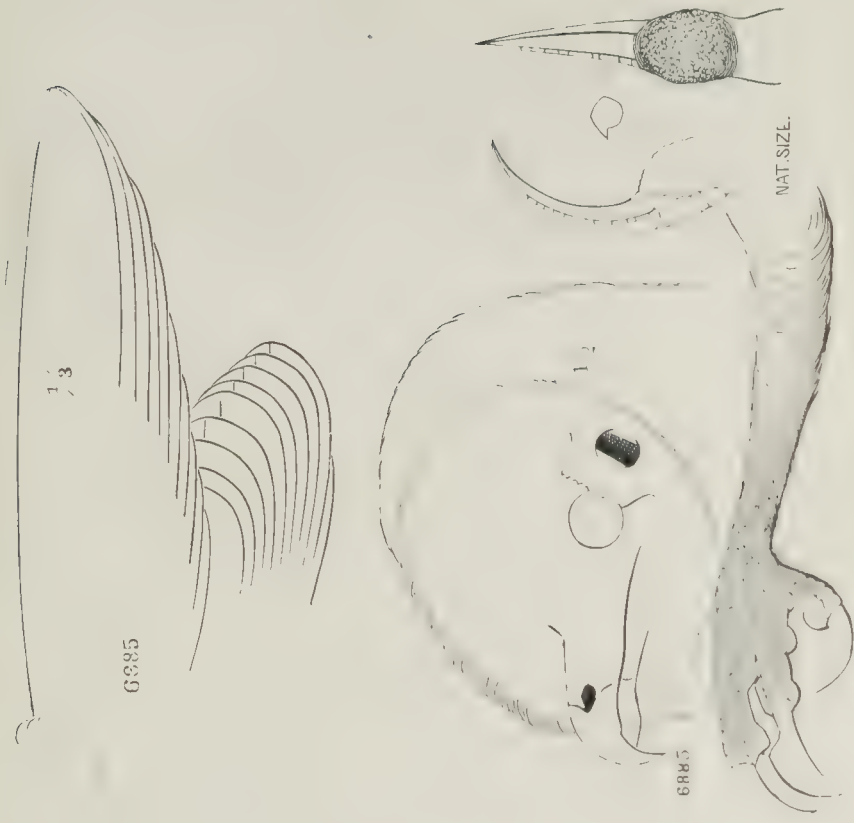


1. *NYCTIBIUS grandis*.



2. *GLAUCIDIUM californicum*.





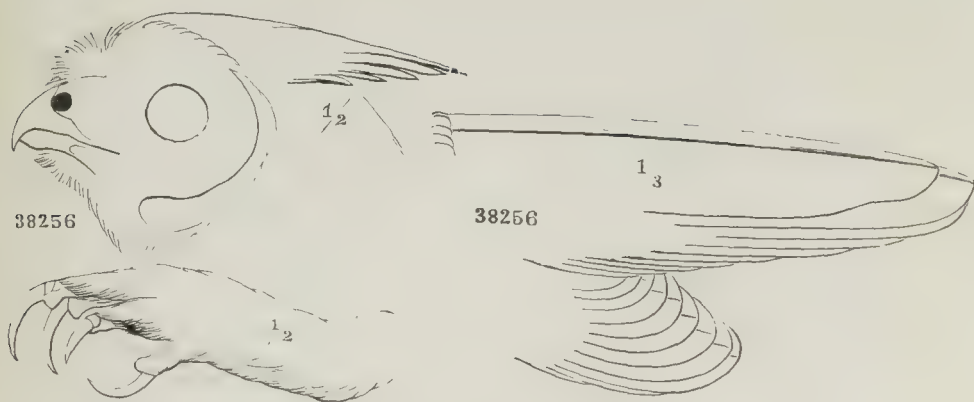
1. *TYTO pratincola*.



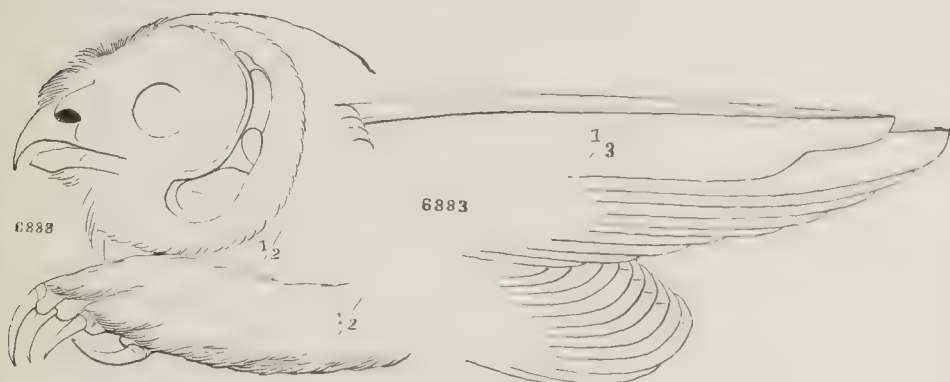
2. *CRYPTOGLAUX acadica*.



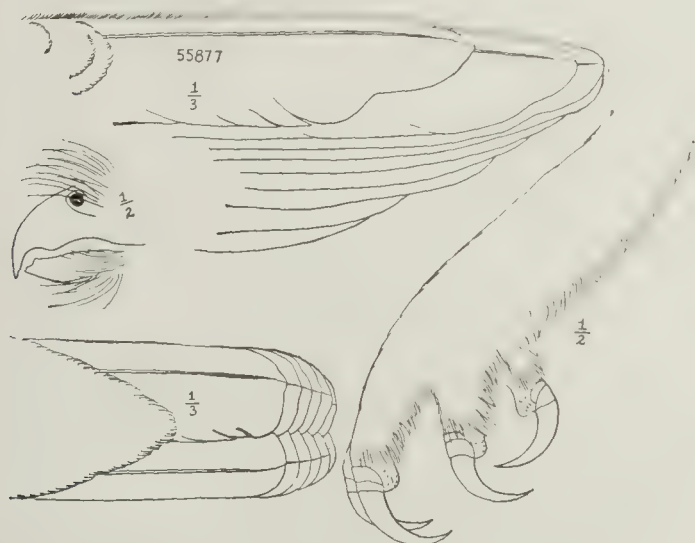




1. *ASIO wilsonianus*.



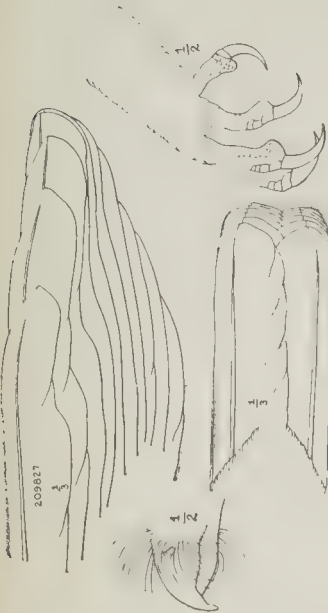
2. *ASIO (Brachyotus) flammeus*.



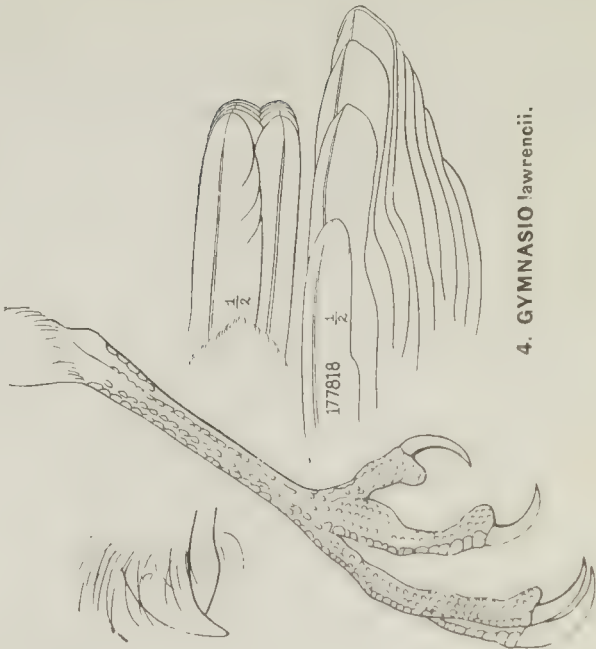
3. *RHINOPTYNX clamator*.



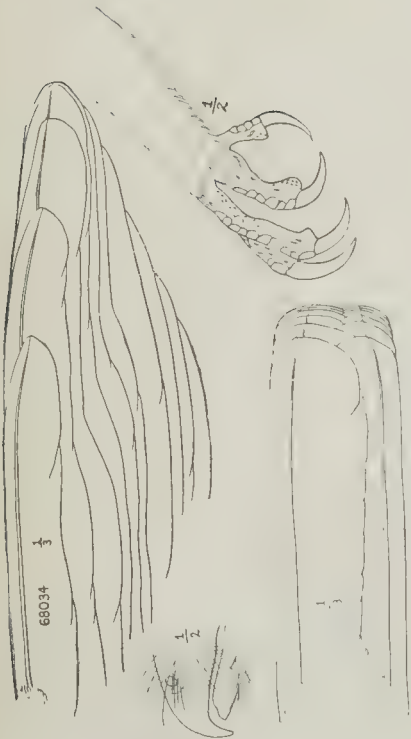




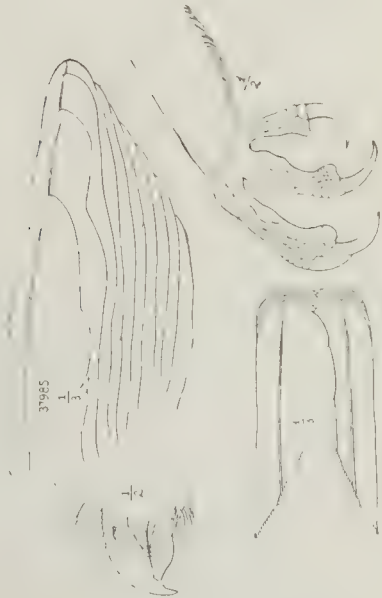
2. CICCABA virgata.



4. GYMNASIO lawrencii.



1. LOPHOSTRIX stricklandi.



3. PSEUDOSCOPS grammicus.





1. *STRIX* varia.



2. *SCOTIAPTEX* nebulosa.







1. *BUBO virginianus*.



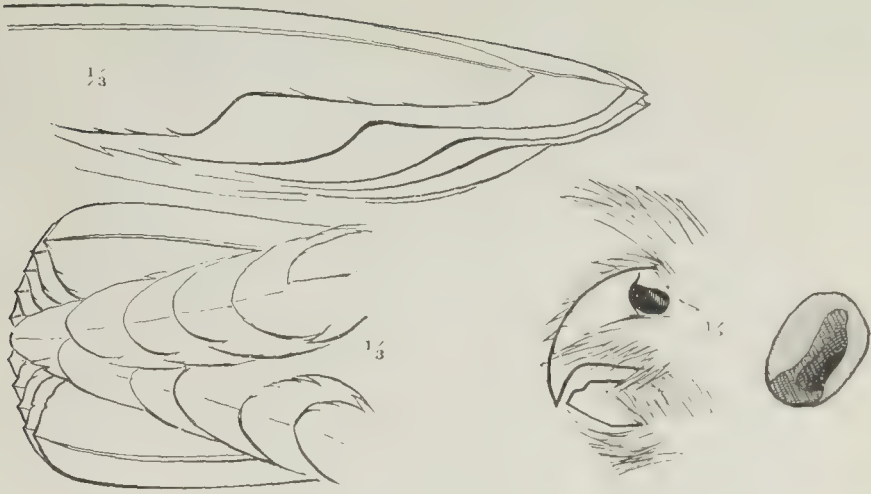
2. *OTUS asio*.



3. *MICROPALLAS whitneyi*.



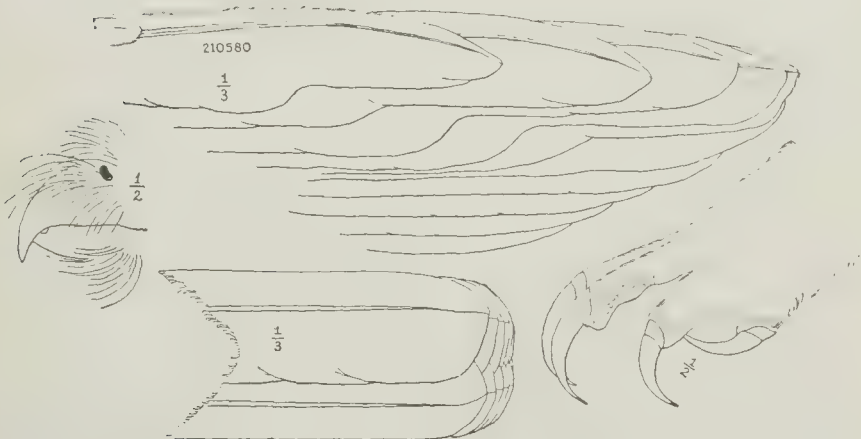




1. *NYCTEA nyctea*.



2. *SURNIA caparoch*.



3. *PULSATRIX saturata*.



SMITHSONIAN INSTITUTION.  
UNITED STATES NATIONAL MUSEUM.

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# BULLETIN

OF THE

UNITED STATES NATIONAL MUSEUM.

No. 50.

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THE BIRDS

OF

NORTH AND MIDDLE AMERICA.

BY

ROBERT RIDGWAY,  
CURATOR, DIVISION OF BIRDS.

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PART VI.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.

1914.













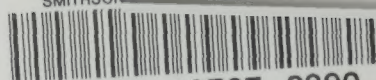












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